National Edition

Job Futures 2000

World of Work

Overviews and Trends

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World of Work

Overviews and Trends

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MESSAGE FROM THE MINISTER OF HUMAN RESOURCES DEVELOPMENT CANADA

Welcome to *Job Futures 2000*, a guide to the jobs of tomorrow for students, parents, job seekers, teachers, career and education counselors.

Deciding on a career path has never been easy. It has always involved difficult choices. Preferences and aptitudes must be matched with education and training choices. As we move into the new millenium, we also want to keep the future job market in mind.

The Government of Canada is strongly committed to providing young Canadians with quality career information, to supporting all Canadians in their career and education choices, and to offering the best labour market information through such endeavours as *Job Futures.*

Available in print and Internet formats, *Job Futures 2000* profiles current and future labour market conditions in Canada by occupation and field of study. New labour market information has been added to assist education and training choices. *Job Futures 2000* is also more accessible and user-friendly. State-of-the-art, dynamic web technology allows users of the web version to customize requests for information.

I believe you will find *Job Futures 2000* to be an indispensable resource in helping you make informed choices.

Jane Stewart

Jane Stewart

Canada

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Introduction

Labour Market Information (LMI): An Essential Source of Information

The nature and structure of the labour market have changed considerably over the past decade, primarily due to the globalization of the exchange of goods and services and the development of a more knowledge-based and technology-oriented economy. The result is that today's labour market is more turbulent, undergoing rapid and continuous change.

In addition, the standard "school-work-retirement" profile that characterized the labour market for decades is changing. Increasingly in today's economy, people hold many jobs during their working life and may pursue several different careers. An individual's working life may also be interrupted by non-work episodes for economic, professional or family-related reasons.

Decisions about careers, and the related education or training requirements, are among the most difficult that an individual must make. The implications of decisions made today are far reaching, in terms of an individual's social and economic well-being.

In this context, it is important that Canadians have reliable LMI in order to make well-informed career and educational choices, not only at the beginning, but throughout their working lives.

Job Futures and Career Planning

The *Job Futures 2000*[1] suite is designed to provide Canadians with information on current and future labour market conditions in order to make, or advise others in making, effective and informed career and education choices.

Being aware of current or future labour market conditions is a useful and necessary exercise, which may be required at various intervals throughout a person's life. Using timely and reliable LMI is a key step to improving the efficiency of the decision-making process, and in helping to ensure positive labour market outcomes. It is important to realize that the labour market is constantly changing and that keeping abreast of these changes from a wide array of sources is critical to ensure that Canadians have the right set of skills and knowledge required to compete effectively in the labour market.

The *Job Futures 2000* suite includes *World of Work: Overview and Trends; Part 1: Outlooks by Occupation; Part 2: Outlooks by Field of Study;* and the *Companion.*

Part 1 contains detailed information about current and future Canadian labour market conditions broken down into 211 occupational profiles. *Part 2* profiles the work experiences of recent post-secondary graduates and reviews the current and future labour market conditions for 155 fields of study. The *Companion* is a step-by-step guide illustrating how the various parts of *Job Futures* can be used to answer typical career-related questions.

World of Work: Overviews and Trends

World of Work: Overviews and Trends provides information to help answer a number of key questions that anyone undertaking career or education planning is, or should be, asking:

- What are the general trends in the labour market that I should consider when making decisions now or within the next few years?
- Are there certain industries that are doing better than others?
- Are there new or evolving occupations out there that I should look into?
- What impacts will the career or education choices I make influence my experiences in the working world, in the near term and over time?
- Once I've assessed my interests, aptitudes, skills and abilities, what labour market factors should I consider to ensure I'm making an informed choice?
- Are labour market conditions the same everywhere, or should I compare conditions at the national, provincial and even local levels?

World of Work complements the *Job Futures 2000* suite by setting the stage for the more detailed information provided in *Part 1: Outlooks by Occupation,* and *Part 2: Outlooks by Field of Study.*

To help address the questions listed above, **Chapter 1, Overview of Labour Market Trends** presents a summary of the 'big picture' by looking at aggregate labour market trends in the Canadian economy, by industry, broad occupational group, broad field of study and level of education.

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[1] Readers are encouraged to review the section "Job Futures, LMI and Career Planning" in *Part 1: Outlooks by Occupation* or *Part 2: Outlooks by Field of Study* for more detail on how LMI and *Job Futures 2000* fit into the career-planning process.

An area of interest to many people looking for information about the world of work is **Emerging Sectors or Occupations (Chapter 2)**, which can include new occupations as well as changes to more traditional occupations. Although new occupations cannot be quantified to the same extent as traditional ones, they are important to consider for those trying to keep as many options open as possible.

Chapter 3, Key Factors to Consider, includes analysis illustrating how decisions made today can impact labour market performance over time. For example, the research presented indicates that labour market outcomes, such as rates of return to investing in post-secondary education, or rates of unemployment, flexibility, and opportunities, are generally better with more education. In other words, in terms of the factors mentioned, having a high school diploma is better than having no diploma, and having post-secondary courses, certificates, diplomas or degrees improves one's labour market outcomes relative to a high school diploma. The research also shows, however, that these general results can vary significantly depending on the individual, occupation, field of study, region, and over time.

Nation-wide trends have an impact on occupations at all levels: national, provincial and local. However, general trends seen at the national level can differ or have different impacts at the provincial level. In **Chapter 4, Across Canada**, we present sample lists of occupations at the provincial level to illustrate the similarities and differences that can occur.

A summary of the outlooks found in *Parts 1* and *2* of *Job Futures* is provided in **Chapter 5, Overview of Job Futures Outlooks.** It includes an overview of current and future outlooks aggregated by skill type and skill level related to the detailed occupational outlooks found in *Part 1*, and an overview of outlooks aggregated by level of education and broad field of study related to the detailed field of study profiles found in *Part 2*.

The intent of the various sections in *World of Work* is not to state whether a specific career or educational path is the best choice for an individual, but to provide information for job seekers and career planners to use, in addition to other information, when making these critical decisions.

Chapter 1

Overview of Labour Market Trends

Introduction

This chapter is designed to highlight the impact of changes caused by increased economic activity and/or attrition (retirements, death) on the Canadian labour market from various perspectives – by aggregate industrial and occupational groups, as well as by aggregate education and skill levels. Additional details for each of these categories are available to the reader in Chapter 5, "Overview of Job Futures Outlooks".

All projections presented in this chapter, as is true throughout the *Job Futures 2000* suite, cover the period from 1999 to 2004[1].

Overview of Industrial Labour Market Trends

Job opportunities, or new job openings, have two sources:

- The first source is **new job creation**, resulting from changing economic activity. A current example of this is the increase in market activity due to the recent globalization of the exchange of goods and services and the development of a more knowledge- and technology-based economy. The result has been dynamic changes in the nature and composition of job growth in the Canadian labour market.
- The second source of job opportunities is **attrition**, which are job openings that result from workers leaving jobs due to retirement or death.

When analyzing the labour market, it is important to examine both of these sources of job opportunities to develop a better picture of where the jobs are currently, and where they will be in the future.

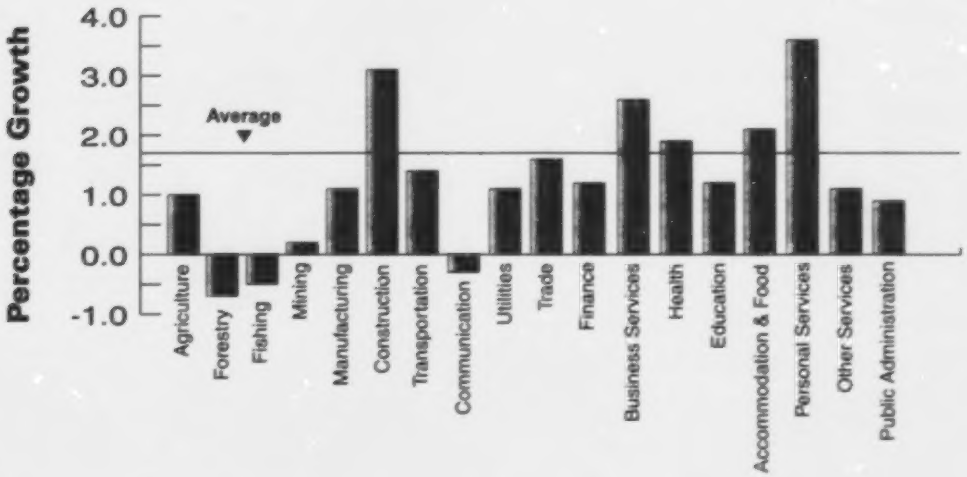
i) Job Openings Due to Increased Economic Activity

Economic growth is expected to account for 40% of new job openings over the next five years.

About 80% of these new job openings are expected to be in the service sector of the economy, primarily in the business services, health, accommodation and food services, and personal services industries.

- Growth in the **business services industry** is largely due to increased demand for computer professionals and consultants. This trend reflects: i) increased demand due to economic growth and ii) changes in the behaviour of

Graph1.1 — ***Growth in New Job Creation by Industry (1999-2004)***



Source: "Canadian Occupational Projection System (COPS) 1999 Macroeconomic Reference Scenario", T-99-1E, Applied Research Branch, HRDC.

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[1] At the time of production the latest year of actual data available for most indicators was 1998.

organizations that have shifted from internal production activities to external production activities. For example, instead of directly employing a computer professional, a company will "contract out" for the professional on an as-needed basis. This trend also holds true for other consulting professionals such as engineers and lawyers.

- The **health sector** is expected to rebound from the restructuring of the mid-1990's which, in conjunction with the increasing demands of an aging population, will result in an above-average rate of new job creation. However, some institutional restructuring is expected to continue, resulting in stronger growth in private practices and medical labs than in hospitals. This trend is expected to have a positive influence on a broad range of health care occupations.

- The outlook for strong employment growth in the **accommodation and food services industry** results from changing consumer preferences (partly due to the aging of the population), rising personal disposable income, and a relatively weak Canadian dollar that stimulates tourism.

- The rate of new job creation in the **personal services industry** is expected to be twice that of the economy-wide average for all industries. This strong growth is the result of an aging population, continued economic growth, and the increasing number of two-income families—all factors which drive the occupational outlook for personal service occupations such as childcare worker and home support worker.

- Although growth in the **public administration sector** is likely to resume, it is expected to remain below earlier peaks. Growth is expected to be lowest in the federal government and highest in local governments whose employees will be more involved in the delivery of programs and services to an aging population.

- Employment growth in the **education sector** is expected to rebound slightly following the restructuring which occurred in several provinces in the mid to late 1990's. However, the rate of growth will be less than average due to the age structure of the population, i.e. fewer young people than in previous decades.

- The **communication sector** overall is expected to shed workers over the projection period, with anticipated losses in the radio and television industry exceeding gains in the telecommunication carriers industry:

  - Employment loss in the radio and television industry is generally due to rationalization—for example, the use of pre-recorded programs done in one location and then sold to a multitude of stations.

  - Employment strength in the telecommunication carriers industry is tied to the adoption of new technology and the most efficient means of making this service attractive and available to clients.

The remainder (20%) of new job creation will be in the goods sector of the economy, mainly in the construction and manufacturing industries.

- The **construction industry** is expected to continue its recent strong employment growth due to the cyclical strength of the Canadian economy. Job opportunities are expected to increase due to residential and commercial construction and the replacement of an aging infrastructure (e.g. bridges and roads).

- Although the **manufacturing sector** as a whole is expected to grow slightly slower than average, there will be some pockets of strong growth in areas such as the rubber, plastics, paper products, printing and publishing and machining industries.

  - Prospects in the rubber and plastics industry are tied to growth in the automotive and parts industry.

  - Strong growth in the machining industry is tied to an increase in machinery and equipment investment and strong growth in the construction industry.

  - Employment growth in the printing and publishing industry is primarily a result of an aging population with more leisure time for reading, and growth in the emerging multimedia industry.

- Employment growth in the **agriculture and mining sectors** is expected to be weak due to increases in mechanization, relatively weak world commodity prices, and new labour-saving processes.

However, the forestry and fishing industries, which are part of the goods sector of the economy, are expected to shed workers over the next five years.

- Employment loss in the **forestry and fishing industries** over the 1999-2004 period are expected to follow primarily from supply constraints, relatively weak world commodity prices, increased mechanization, and resource depletion. This trend has negative implications for employment opportunities in the primary occupations, with the exception of highly-skilled, highly-specialized jobs.

ii) Job Openings Due to Attrition (retirement, death)

An estimated 60% of new job openings will be due to normal attrition from the workforce.

Retirements are largely dependent upon the existing age structure of an industry and future and past retirement patterns. Retirements and deaths play a larger role in determining the number of job openings in some industries than others. This varying structure is presented in Table 1.1.

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Table 1.1 — ***Profile of the Workforce by Industry***

	% of Workers 45 years of age and older		Average Age of Workers		Average Age of Retirement
	1986	1996	1986	1996	1993-97
All Industries	26.9%	30.9%	36.7	38.2	61.6
Primary Industries					
Agriculture	43.3%	44.7%	42.0	42.9	67.1
Other Primary	25.0%	30.8%	36.5	38.7	63.7
Secondary Industries					
Manufacturing	27.9%	30.6%	37.2	38.7	62.2
Construction	28.2%	31.1%	36.9	38.7	64.7
Utilities	29.2%	33.1%	38.2	40.2	57.8
Tertiary Industries					
Retail Trade	23.7%	24.4%	34.0	34.6	64.2
Wholesale Trade	25.5%	28.5%	36.3	38.0	63.3
Finance, Insurance & Real Estate	25.1%	33.3%	36.9	40.0	62.1
Health and Social Services	26.1%	34.1%	37.3	39.8	60.3
Business Services	23.5%	29.9%	36.4	38.6	64.7
Other Services	22.3%	23.4%	33.3	34.1	64.7
Transportation and Storage	31.7%	36.3%	38.7	40.6	61.7
Education	31.2%	43.0%	39.7	41.4	59.2
Provincial Public Administration	27.5%	38.6%	38.1	41.3	58.3
Federal Public Administration	24.0%	30.2%	36.3	38.9	58.2
Local and Other Public Admin.	28.2%	33.0%	37.4	39.4	58.9
Communications	24.5%	28.6%	36.9	38.7	58.3

Source: Census 1986 and 1996, LFS, Statistics Canada, 'Measuring the Age of Retirement', Perspectives , Summer 1997, 75-001 XPE

As can be seen in Table 1.1 the average age of workers in every industry, as well as the percentage of workers 45 years of age and older, has increased over the 1986 to 1996 period. Some industries such as forestry, fishing, communications, health, education, finance and public administration, have aged and are expected to continue to age at a faster rate than the other industries.

Retirements are expected to play a relatively larger role in the new job openings in the education, finance, and public administration industries.

- While the **education industry** is expected to have a below-average rate of new job creation, it is expected to have strong growth in job openings due to retirements. This is the result of several factors: i) the average age of workers in this industry, as seen in Table 1.1, is above average; ii) the average age is increasing at a rate faster than the economy-wide average, because there are relatively more workers in the 45 years and older category in the education sector; and iii) the average age of retirement is below average.
- The **finance industry** is also expected to have a below-average rate of new job creation. However, as Table 1.1 illustrates, the average age of the workforce in this industry is increasing about twice as fast as the economy-wide average, which is expected to result in job openings for new entrants.
- Retirements are expected to be the major source of new job openings in the **public administration industry**, especially at the federal level. The average age of workers in this industry is not only increasing more rapidly than the economy-wide average, but the average age of retirement is considerably lower than is generally found in other industries. The combination of these two factors is expected to produce a strong demand for workers in public administration, despite a below-average rate of new job creation.
- As mentioned above, the **forestry, fishing and communication industries** are expected to experience job losses over the 1999-2004 period. However, job openings are still expected in these industries as new workers will be needed to replace workers who leave due to retirement or death.

Occupational Labour Market Trends

Job Futures uses the National Occupational Classification (NOC) as its classification structure. The occupations are grouped into skill levels and skill types. These categories are used to present the occupational labour market conditions presented in Table 1.2.

With regard to **skill levels**, occupations are grouped according to the minimum amount of education and training generally required to enter the occupation. The groupings are represented in the *columns* of Table 1.2 on the next page:

- M – management occupations;
- A – professional occupations (university degree/diploma);
- B – technical, paraprofessional and skilled occupations (community college or trade vocational diploma/ certificate);
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- M – management occupations;
- A – professional occupations (university degree/diploma);
- B – technical, paraprofessional and skilled occupations (community college or trade vocational diploma/certificate);
- C – intermediate occupations (high school graduation); and
- D – labouring and elemental occupations (less than high school graduation).

Occupations are also grouped according to **skill types**, i.e. reflecting the major type of work performed. These groupings roughly correspond to groupings of similar industries. These skill types, while approximating the industry structure presented in the previous section, may contain a blend of several industries. The skill types are represented in the *rows* of Table 1.2. For example, the trade and transportation skill type is a blend of construction, manufacturing and transportation industries.

Table 1.2 demonstrates that, in general, labour market conditions currently and in 2004 are rated as:

- *Good* for university graduates working in business, natural and applied sciences and health.
- *Fair* in the trades and transportation skill type with *good* ratings for managers.
- *Fair* for those with a college or trade/vocational diploma.
- *Fair* for university graduates working in social sciences, arts, culture or recreation.
- *Fair* for those with a high school diploma except for those looking for jobs in sales, service or the primary industry where the outlook is rated as *limited.*
- *Limited* for those with less than high school graduation.

i) Overview of Occupational Labour Market Trends by Skill Level

Job opportunities in occupations requiring less than high school completion are becoming fewer, while occupations requiring post-secondary training are growing significantly and will provide more job opportunities.

This trend is illustrated in Graph 1.2 which compares the share of new job creation for the workforce in 1998 across the five aggregate skill levels with the share of new job creation expected over the period from 1999 to 2004.

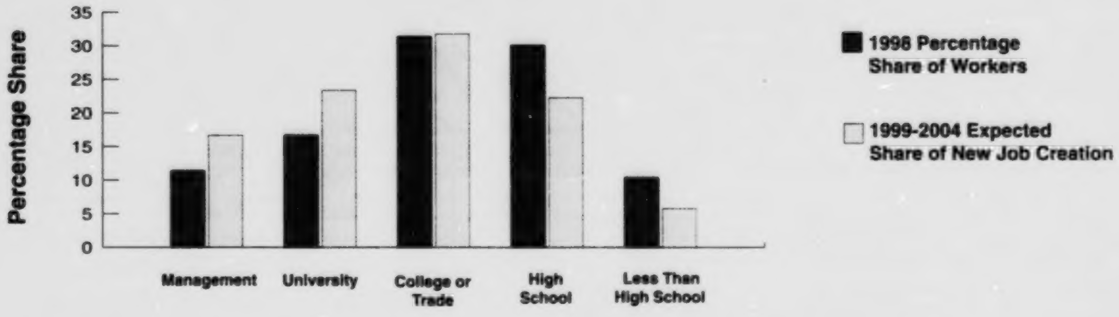
Table 1.2 — ***Summary Table of Occupational Labour Market Conditions – Current and 2004***

Skill Types	Skill Levels: Managerial	Professional	Technical, Paraprofessional & Skilled	Intermediate	Labouring and Elemental	All
	Current - **2004**	Current - **2004**	Current - **2004**	Current - **2004**	Current - **2004**	Current - **2004**
Business, Finance & Administration	good - **good**	good - **good**	good - **good**	fair - **fair**	--	good - **good**
Natural & Applied Sciences	good - **good**	good - **good**	good - **good**	--	--	good - **good**
Health	good - **good**	good - **good**	fair - **fair**	fair - **fair**	--	good - **good**
Social Science, Education, Government Services & Religion	good - **good**	fair - **fair**	fair - **fair**	--	--	fair - **fair**
Art, Culture, Recreation & Sport	good - **good**	fair - **fair**	fair - **fair**	--	--	fair - **fair**
Sales & Services	good - **good**	--	fair - **good**	fair - **limited**	limited - **limited**	fair - **limited**
Trades, Transport & Equipment Operators	fair - **good**	--	fair - **fair**	fair - **fair**	limited - **limited**	fair - **fair**
Primary Industry	good - **fair**	--	fair - **fair**	limited - **limited**	limited - **limited**	fair - **fair**
Processing, Manufacturing & Utilities	good - **good**	--	good - **good**	fair - **fair**	limited - **limited**	fair - **fair**
All	good - **good**	good - **good**	fair - **fair**	fair - **fair**	limited - **limited**	fair - **fair**

Source: "Canadian Occupational Projection System (COPS) 1999 Macroeconomic Reference Scenario", T-99-1E, Applied Research Branch, HRDC.

See definitions of "Good", "Fair" and "Limited" in the "Glossary of Terms".

Graph 1.2 — ***Share of New Job Creation by Skill Level (1999-2004)***



Source: 1998 Labour Force Survey and the COPS Demand Model (1999).

One can see that the share of new job creation is higher for those occupations requiring post-secondary education over the next few years relative to 1998, while it is lower for those requiring high school or less than high school. This is a result of differences in the projected rates of growth in new job creation. While the rate of new job creation in the Canadian economy is expected to average 1.7% per year over the 1999-2004 period, occupations generally requiring post-secondary training are expected to grow at above-average rates (2%), while those requiring high school or less are expected to grow at below-average rates (1.2% and 0.9% respectively).

Some of the specific growth areas by skill level over the 1999-2004 period are:

- Occupations generally requiring a university degree are expected to provide a large number of job opportunities (23.4% of all new jobs). Strong employment areas include:
    - Natural and applied sciences, e.g. engineer and systems analyst.
    - Business, finance and administration, e.g. accountant, human resources specialist, and business service professional.
    - Social sciences, e.g. lawyer, teacher, researcher and consultant.
- The largest proportion (31.8%) of new job creation is expected in occupations that generally require a community college or trade diploma/certificate.
    - The majority of these job opportunities are in the trades and transport area, primarily the result of the strong growth in the construction industry and the transportation industry, especially trucking.
    - The sales and service area is also expected to account for a large proportion of job opportunities, primarily because the sales and services sector employs the largest group of workers in the Canadian workplace, i.e. 27% of total 1998 employment.
    - Other occupations that will benefit from job growth are real estate agent, technical sales specialist (wholesale sales), firefighter, and police officer as well as technical occupations in personal services.
- Occupations generally requiring high school completion are expected to provide about 22% of all new jobs. Strong areas of employment growth include:
    - Business, finance and administration i.e. administration clerks.
    - Trades, transport and equipment operators i.e. heavy equipment operators.
    - Manufacturing and processing i.e. machine tool operators.
- The fewest job opportunities (5.8% of all new job openings) are expected to be in occupations generally requiring less than high school graduation. The major source of job opportunities for this skill level are in the sales and service skill type which includes such occupations as cashier, cleaner, and food counter attendant.

ii) Overview of Labour Market Trends by Level of Post-secondary Education

Slightly over 70% of the new jobs created are expected to be in occupations requiring at least some post-secondary training. Generally speaking, the more education a person has the higher the probability of finding a job.

Labour market conditions are expected to be *good* to *fair* for recent graduates from a post-secondary institution. For example, they are *good* for master's graduates, and *fair* for graduates at the remaining post-secondary educational levels.

Table 1.3 — ***Labour Market Conditions for Recent Post-Secondary Graduates – Current and 2004***

Broad Fields of Study	**Education Levels** Master's	Undergraduate	Community College	Trade/ Vocational	All
	Current - **2004**	Current - **2004**	Current - **2004**	Current - **2004**	Current - **2004**
Arts	--	fair-**fair**	fair-**fair**	fair-**fair**	fair-**fair**
Business, Commerce, Management & Administration	good-**good**	good-**good**	fair-**fair**	limited-**limited**	good-**good**
Education	fair-**fair**	fair-**fair**	fair-**limited**	--	fair-**fair**
Engineering & Engineering Technologies	good-**good**	good-**good**	fair-**fair**	fair-**fair**	fair-**fair**
Humanities	fair-**fair**	fair-**fair**	fair-**fair**	--	fair-**fair**
Medicine and Health	good-**good**	good-**good**	good-**good**	fair-**fair**	good-**good**
Natural Sciences and Primary Technologies	fair-**fair**	fair-**fair**	limited-**limited**	limited-**limited**	fair-**fair**
Physical Sciences	good-**good**	good-**good**	good-**good**	good-**good**	good-**good**
Social Sciences and Services	fair-**fair**	fair-**fair**	fair-**fair**	limited-**limited**	fair-**fair**
All	good-**good**	fair-**fair**	fair-**fair**	fair-**fair**	fair-**fair**

Source: "Canadian Occupational Projection System (COPS) 1999 Macroeconomic Reference Scenario", T-99-1E, Applied Research Branch, HRDC.

See definitions of "Good", "Fair" and "Limited" in the "Glossary of Terms".

No broad fields of study at the **university** level are expected to experience *limited* labour market conditions by 2004. The outlooks for university graduates from the business, engineering, physical sciences (e.g. computer science) and the medicine and health fields are expected to be *good* over the next five years.

The favourable outlook for these university graduates reflects the global trend towards knowledge-based national economies which require an "upskilling" of the workforce. The movement towards occupations or industries that generate ideas or provide expert advice has been, and is expected to continue to be, one of the main sources of changing employment patterns. To compete successfully in an ever-expanding global economy, organizations must have access to such professionals as accountants, engineers and systems analysts.

- The employment outlook for **business graduates** over the next five years is expected to be *good* as more organizations require their analytical skills to compete in a global economy.
- Employment opportunities for **engineering graduates** are expected to be *good*. Engineers are considered to be core workers in a knowledge-based economy which is generally driven by science and technology activities. This favourable outlook also reflects growth in the construction and business services industries.
- The outlook is very *good* for **health graduates** from medicine, dentistry, chiropractic, optometry and nursing. However, the outlook for graduates from rehabilitative medicine is expected to weaken as the supply of recent graduates exceeds the demand for these workers.
- The fastest growing occupations over the last 20 years, outside of the management group, have been **systems analysts and computer programmers**, although growth is expected to slow over the next five years. The demand for these occupations is growing rapidly across all industries, reflecting the widespread adoption of computer technologies.

- The outlook for **pure science graduates** such as chemists, geologists, and physicists is expected to improve. The above-average rates of retirements in these occupations exceed below-average growth in new school leavers, *i.e.* people graduating from these fields of study.

However, conditions will vary for graduates from other post-secondary institutions, such as colleges and trade schools.

As Table 1.3 indicates, the outlook for **community college graduates** is generally expected to remain *fair* over the projection period. This reflects the balance between a *limited* outlook for graduates from natural science and primary industry technologies, largely due to weaknesses in the primary industries where they normally look for work, and a *good* outlook for those looking for work in the medicine and health and computer science fields. The positive outlook for these latter two fields follows largely from the demands of an aging population, the infusion of new spending in the health sector, and the global trend towards a knowledge-based economy.

- In other fields of study at the college level, labour market conditions are expected to:
  - Be *limited* for education/counselling graduates as above-average new job creation is exceeded by growth in the number of new graduates.
  - Deteriorate for retail sales graduates due to below-average growth in new job creation combined with above-average growth in the number of new school leavers and occupational re-entrants.
  - Deteriorate for electrical/electronic technology and instrumentation technology graduates—the result of average growth in new job creation being exceeded by above-average growth in new graduates.

The outlook for **trade/vocational graduates** is expected to be *fair* during the projection period reflecting *limited* labour market conditions for recent graduates from natural sciences, primary industry technologies and social services, and a *good* outlook for computer science graduates. Favourable labour market conditions for engineering technology graduates, especially construction technology graduates, helps to maintain the *fair* rating over the projection period.

- In other fields of study at the trade level, labour market conditions are expected to:
  - Be *limited* for business graduates.
  - Improve for civil engineering technology graduates due to above-average growth in new job creation brought on by a rebounding construction sector and an above-average rate of retirement.
  - Deteriorate for creative and design artists as above-average growth in new job creation is significantly exceeded by above-average growth in the number of recent graduates.
  - Deteriorate for retail sales graduates due to below-average growth in new job creation and well-above-average growth in the number of new school leavers and occupational re-entrants.

iii) Overview of Labour Market Trends by Field of Study

Labour market conditions are expected to be "good" for recent graduates from such broad fields of study as business, medicine and health, and physical sciences.

- While university graduates in all areas of **business** generally have positive work prospects, those from the retail trade field of study at the trade/vocational and community college levels will find deteriorating job opportunities resulting from weak growth in the retail trade sector, below-average levels of retirement, and above-average growth in new school leavers and occupational re-entrants. Similarly, job opportunities are expected to deteriorate for trade/vocational accounting graduates due to the growth in the number of new school leavers exceeding growth in new job creation.
- Labour market conditions for graduates from the **medicine and health** broad field of study are generally expected to remain *good* at all levels of education except trade, but are expected to deteriorate for undergraduates with a degree/diploma in rehabilitation medicine, primarily because of increased levels of recent graduates and few occupational retirements.
- No major field of study in the **physical sciences** is expected to experience deteriorating job opportunities between 1998 and 2004, due to high retirement rates and a steady flow of new graduates. Labour market conditions are expected to improve for undergraduate and master's graduates in geology and physics. Labour market conditions for computer science graduates, regardless of level of study, are rated as *good* both currently and in 2004.

Alternatively, labour market conditions are expected to be "limited" for recent community college and trade/vocational graduates in natural sciences and primary technologies. Trade/vocational graduates in business and in social services are also expected to face "limited" labour market conditions.

- The situation for **natural science and primary technology** graduates at both the trade/vocational and community college levels of study is the result of a weak primary industry sector and large increases in new graduates in recent years.
- Conditions for community college **education and counselling** graduates are expected to deteriorate as a result of above-average growth in new job creation being exceeded by growth in the number of new school leavers.

- The *limited* outlook for trade/vocational graduates from **business** and from **social services**, is primarily due to *limited* ratings for such major fields of study as cooking, service industry technologies and social services technologies. These weaknesses are due in large part to an anticipated large number of recent graduates seeking employment in these areas.

Conclusion

This chapter has highlighted the impact of changes in economic activity and attrition on the size and structure of the Canadian labour market from various perspectives – by industrial and occupational groups, as well as by education and skill levels. The movement towards jobs that generate ideas or provide expert advice, referred to as the 'knowledge economy', has been and is expected to continue to be one of the main sources of changing employment patterns.

In summary:

- Economic growth is expected to account for 40% of new job openings over the next five years, while natural attrition accounts for the other 60%.
- About 80% of the new job openings related to economic growth are expected to be in the service sector of the economy, primarily in the business services, health, accommodation and food services, and personal services industries. The remainder (20%) are expected to be in the goods-producing sector, mainly in the construction and manufacturing industries.
- Over 70% of the new jobs created are expected to be in occupations requiring at least some post-secondary training. Occupations requiring less than high school completion are becoming fewer, while occupations requiring post-secondary training are growing significantly and will provide more job opportunities.
- Labour market conditions vary across occupations, by field of study, and across the different post-secondary levels of education examined i.e. university, college and trade.

Chapter 2

Emerging Sectors and Occupations: New Work Opportunities

Introduction

Some sectors are still in their infancy while those undergoing change are in a state of flux. Finding reliable, detailed quantitative information about emerging occupations in these sectors remains difficult, if not impossible. Readers of *Part 1* of *Job Futures*, entitled *Outlooks by Occupation*, will find information on current and future labour market conditions for more established occupations.

This section of *World of Work: Overviews and Trends* is designed to alert readers to the existence of emerging sectors and occupations that are providing Canadians with different labour market opportunities than in the past—opportunities that they need to take into account when making decisions on educational paths and choosing a career. The examples presented in this chapter are for illustrative purposes and are not intended to represent an exhaustive list of opportunities in emerging sectors or occupations in the Canadian labour market.

What are "emerging" sectors and occupations?

The unprecedented rate and breadth of technological advances, and the impacts of global competition on the pace of developing and adopting new technologies, are having significant effects on the Canadian labour market - changing where, when and how work is done, and by whom. These changes are leading to new work opportunities, particularly in emerging sectors and occupations.

Emerging sectors or occupations can occur as a result of changes in technologies, markets, or regulations. In this context, 'emerging' is used to define sectors or occupations that: i) are completely new, ii) already exist but are undergoing significant change, or iii) are experiencing high employment growth[1].

Technological development leads to new sectors and occupations

Technological change is not new. For example, in the first half of the 20th century, technological advances resulted in the introduction of the automobile and aeroplane creating significant changes in the way people travelled, while manufacturing was transformed by automated assembly lines. However, the nature of the change in the second half of the century, led predominantly by computerization, is not only faster than ever before, but the number of applications and direct and indirect effects are without precedence in human history.

For example, the extensive and relatively new **information technologies and telecommunications industry** covers a range of occupations that did not exist a decade ago. This leading-edge industry has four components: software and computer services, manufacturing, communications and cable services, and multimedia.

Multimedia, the newest sector of this industry, includes the activities carried out to digitize material such as sounds, images and text, and disseminate this material electronically or transfer it in computer format, providing users with an interactive environment[2]. Multimedia applications have a wide variety of purposes—information, education, medical diagnosis and treatment, and entertainment. The increasing popularity and subsequent use of multimedia has created many new occupations. For example:

- **Webmasters** write the computer code to publish or update text and images on web sites, and design, edit and maintain the content of different sections of such sites. Growth in employment for this occupation is particularly strong in publishing, trade and business, where e-commerce is expected to increase considerably over the next ten years.
- **Multimedia product testers** ensure quality control of electronic products such as web sites, CD-ROMs, interactive terminals, and electronic games. Until very recently, recruitment for this position was intense. Workers in this field have an artistic bent and are not necessarily extensively trained.
- **Examples of other new multimedia occupations** include 2D (i.e. two-dimensional) and 3D animators, content analyst, integrator and designer-writer.

Technological change also affects existing occupations

Many existing occupations have changed partially or completely as a result of advances in technology. For example, in addition to introducing new occupations, the multimedia sector includes hybrids of more traditional occupations, such as:

- **Cyberjournalists**, who produce customized electronic news, play a role similar to that of conventional journalists in the print media. However, cyberjournalists can target their materials to micro-markets more easily on the Internet, while print journalists must generally meet the needs of a broad, diverse readership.
- **Cybercafé managers** have responsibilities that include those of traditional café managers, i.e., planning and directing the activities of a coffeehouse. However, their establishments also provide Internet access to customers who pay by the hour. The responsibilities of cybercafé managers may include showing customers how to surf the Web, and handling repair and maintenance of computer equipment.

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[1] Adapted from "Issues in Labor Statistics," U.S. Department of Labor, Bureau of Labor Statistics, Summary 98-11, November 1998.

[2] Association des producteurs en multimédia du Québec (APMQ)

Examples of occupations in other sectors that are undergoing significant changes:

- **Typesetters** were once indispensable to the printing industry. Today, they have been almost completely replaced by **pre-print computer graphics designers** who use software to lay out elements of documents such as text, graphics, and photographs.
- Many of the traditional duties of **secretaries** have been eliminated as a result of voice mail and the widespread use of personal computers. However, **administrative officers/assistants** are more than just updated secretaries. Their work involves a broader set of skills and knowledge and more responsibilities. They also often provide a higher level of support to executive staff such as handling budget management or contributing to presentations. Administrative officer/assistant is a growing occupation in most sectors of the economy.

Sectors experiencing high growth lead to opportunities in emerging occupations

Canadians are also likely to find emerging occupations in sectors that are growing as a result of market expansion, leading to high employment growth. Many companies are achieving high growth rates today as technology enables them to market their products and services in an expanding global market. Examples of high growth sectors include:

- **Information technology (IT) and telecommunications.** The software and computer services sector is the fastest growing segment of this industry, and focuses on the application of new technologies in a variety of industries. Growth in this segment of the IT industry has increased demand for many different types of workers. For example, there is strong recruitment for **computer managers** who are responsible for an organization's computer network. They oversee the installation, configuration, and maintenance of both software and hardware in a local area network (LAN), wide area network (WAN), or Internet/Intranet system.
- **Biotechnology.** The number of Canadian companies involved directly or indirectly in this sector doubled between 1994 and 1997. Bio-pharmaceutical companies form the largest and fastest-growing segment, accounting for about half of the employment, which increased 25% through the 1990s. Agri-biological products is the next largest segment, with industrial enzymes, aquaculture and forestry products accounting for the rest. Over half of the workforce in biotechnology is involved in research and development, requiring highly skilled and highly educated people. The occupations most in demand require a blend of technical and management skills, particularly **senior personnel** with combined science and business backgrounds[3].
- **Aerospace industry.** Many factors have contributed to the resurgence of the aerospace industry: commercial aviation now has access to the world market; increased use of personal aircraft; reconditioning of older aircraft that are still in service; and finally, economic deregulation of air transportation. This growth leads to increased demand for occupations such as **aerospace engineer** and **aviation mechanic**.

New regulations lead to emerging sectors and occupations

The introduction of new legislation to resolve conflicts in, or to protect, a specific sector has had a direct impact on occupations. For example:

- **Environment.** The environment industry has changed a great deal since Canada made a commitment to "sustainable development", defined as development that meets the needs of today without compromising the ability of future generations to meet their needs. Many new or hybrid occupations have resulted from this commitment such as **environmental technologist, environmental lawyer,** and **environmental policy analyst.**
- **Gambling.** Legalization of gambling in some jurisdictions has led to growth in various occupations, many of which existed before. For example, there is an increased demand for **gaming supervisors**, for casinos and slot machine or video poker arcades, who monitor compliance with the rules and policies on games of chance.
- **Patent and international trade law**. The growth in the global economy has had a legal impact on Canadian business. Intellectual property law, including patent legislation, gives exclusive rights for a specified period to a company for a product it has developed. To do business abroad, companies need a good understanding of legislation governing intellectual property and international trade. The results are growing opportunities for **patent agents** and **specialists in international trade law**.

Emerging areas are accessible to most Canadians

Many Canadians believe that emerging sectors are only accessible to those with specialized and/or advanced education or training. While it is true that, for most jobs today, basic requirements such as literacy skills and the ability to use computers are increasing, the emerging sectors offer opportunities to workers with a broad range of educational backgrounds.

Since the variety of occupations in these sectors is diverse, they provide growth in both highly-skilled occupations and supporting occupations which themselves require varying degrees of education, skills and experience. For example:

- **Multimedia.** Canadians do not have to be IT experts to find work in this area, but most jobs do require employees to be comfortable working with computers. Although artistic talent is necessary for many jobs in multimedia, it is not required for all jobs.

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[3] "Stepping Up, Skills and Opportunities in the Knowledge Economy", Report of the Expert Panel on Skills, Industry Canada, 2000

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- **Environment**. The Canadian environment industry employed 221,000 people in 1998[4]. This is a cross-sectoral industry, i.e., people who work in forestry, transportation or manufacturing may have an "environmental" label. This sector requires people with a broad range of education:
  - Less than half of the workers (46%) in 1998 were environmental specialists, i.e., people who contributed directly through resource conservation and pollution control, or who communicated preventive measures to the general public. These specialists had college diplomas, e.g., chemical technologist, wildlife conservation officer and watershed officer, or university training, e.g., biologist, hydrogeologist and geomatics specialist.
  - More than half (54%) held support positions, e.g., landfill equipment operators and administrative staff, including occupations with educational requirements ranging from high school to university training.
- **Aerospace**. This sector experienced significant growth (24.4%) in the five years between 1993 and 1998, with employment levels exceeding 60,000 in 1998[5]. Although this sector is often characterized by the introduction or development of numerous specialized technologies, there are requirements for workers with varying levels of education. For example:
  - One-fifth (20%) of the workforce is comprised of aerospace and other related engineers who require university degrees.
  - Half of the workers assigned to production are in occupations that require specialized training, e.g., mechanics, machinists, aircraft inspectors, electronics assemblers, tool and die makers, and industrial design technologists.
  - The remainder of the aerospace workforce (30%) performs administrative and secretarial duties or works in sales and promotion of products and services – occupations that generally require, at minimum, a high school diploma or post-secondary courses or certificates.

Sample Occupations in Emerging Sectors

A wide range of occupations with varying educational backgrounds is required as sectors emerge, evolve and grow, providing opportunities for a wide range of people. These occupations can range from being completely new to being more traditional, or a hybrid of both. They can also range from those that are more specialized and tend to be specific to a sector, to those that are more general and can be found across many sectors (i.e. cross-sectoral). Table 2.1 gives examples of specialized occupations by level of education required, for the emerging sectors referred to in the previous section. Table 2.2 provides examples of more general or cross-sectoral occupations with different education/training requirements.

Table 2.1 — ***Examples of Specialized Occupations in Emerging Sectors***

Sector	University	College/Technical	High School/Less than High School
Environment	• biophysicist • agrologist • specialists in forest management and environment • specialists in geomatics • geologist • geographer • hydrogeologist • rural engineer • environmental, chemical, mechanical, electrical and industrial engineers	• air quality specialist • environmental technologist • pollution prevention officer • soil technician • watershed officer • environmental inspector • hazardous materials officer • wildlife conservation officer • forestry technologist • regulations officer	• landfill equipment operator • sylviculture and forestry workers • aquaculture and marine harvest labourers

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[4] Canadian Council for Human Resources in the Environment Industry (CCHREI)

[5] Employed Labour Force, Labour Force Survey, 1998, Aircraft and Aircraft Parts Industry (SIC321)

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[4] Canadian Council for Human Resources in the Environment Industry (CCHREI)

[5] Employed Labour Force, Labour Force Survey, 1998, Aircraft and Aircraft Parts Industry (SIC321)

Sector	University	College/Technical	High School/Less than High School
Biotechnology	Occupations in: • biology: cellular, molecular, plant, animal • biochemistry • biophysics • engineering: chemical, food, biomedical, industrial, genetic • immunology • dietetics • medicine • veterinary medicine • physics • food science and technology • pharmacy • bioinformatics • bioethics	• chemical technician/technologist • biological technician/technologist • water supply manager • water pollution control managers • inspectors in public and environmental health • laboratory technician	• see cross-sectoral occupations in Table 2.2

Sector	University/College/Technical	High School/Less than High School
Multimedia	• multimedia producer • project manager • production designer-scene writer • computer graphics designer • 2D and 3D animation designer • web designer • production designer-ideas manager • videographer • product tester • adapter-translator • network architect • information librarian • cyberjournalist • photographer • sound producer • user support • lawyer specializing in protecting intellectual property rights	• product tester • librarian and information clerk

Sector	University	College/Technical	High School/Less than High School
Aerospace	• aeronautics specialist • aerospace engineer • electrical engineer • computer engineer • specialist in software engineering • chemical engineer • physicist • astrophysicist • sales and marketing specialist	• mechanic • aircraft inspector • machinist • tool and die maker • industrial design technologist	• assembler • machining • aircraft electronic assembler

Table 2.2 — ***Examples of General or 'Cross-sectoral' Occupations***

Post-secondary Diploma

- **financial manager**
  - accounting/ bookkeeping occupations
- **human resources manager**
  - HR/personnel occupations
- **sales/marketing manager**
  - sales and marketing occupations
- **office manager**
  - administrative assistant/secretary

High School or Less

- sales clerk
- cashier
- office support worker
- labourer
- machine operator
- motor vehicle driver
- support workers in food services
- mail distribution or information clerks
- reporting, scheduling and distribution occupations
- cleaners

General workplace skill sets: Critical for working in emerging sectors

Today's job seekers not only require specific work-related skills, but they also need good general workplace skill sets. This is even more critical for those wishing to succeed in emerging areas where changes tend to be faster or more dramatic.

Due to this pace of change across labour markets, Canadians also need to adopt a philosophy of life-long learning. They must keep on top of the general and job-specific knowledge and skills required for their occupation.

For example:

- In the past, having to upgrade skills and knowledge on an ongoing basis was an integral part of the job in occupational areas such as medicine, engineering, law or various trades. Today, workers in these areas find that the pace, type and amount of change are increasing, making life-long learning even more essential.
- There are other occupational areas where workers in the past generally found it sufficient to keep abreast of changes through on-the-job experience after leaving school. However, they too must now maintain and upgrade their skills on a more continuous basis with additional courses or training.

Examples of workplace skill sets being demanded at increasing rates by employers from emerging areas, and more generally, are:

- **Flexibility and adaptability to change.** Included are the abilities to:
  - summarize and analyze information
  - withstand stress
  - accept criticism
  - work as part of a team
  - work in a multicultural environment
- **Independence.** Included are the abilities to act on one's own in the areas of:
  - learning
  - problem-solving
  - decision-making
  - taking calculated risks
- **Communications.** Included are the abilities to communicate well:
  - orally
  - in writing
  - independently
  - as part of a team

Some of these skills are also categorized as 'essential' or 'enabling' skills, defined as the kind of skills that people use to carry out a wide variety of everyday life and occupational tasks. They provide people with a foundation to learn other skills, and enhance people's ability to adapt to workplace change. In addition to some of the skills listed above are skills such as reading text, numeracy (math), and computer use. More information about essential skills, and profiles of these skills across various occupations (primarily from NOC Skill Levels C and D), can be found at www.hrdc-drhc.gc.ca/essentialskills.

Table 2.2 — ***Examples of General or 'Cross-sectoral' Occupations***

Post-secondary Diploma	**High School or Less**
• **financial manager** • accounting/ bookkeeping occupations	• sales clerk • cashier • office support worker
• **human resources manager** • HR/personnel occupations	• labourer • machine operator • motor vehicle driver
• **sales/marketing manager** • sales and marketing occupations	• support workers in food services • mail distribution or information clerks
• **office manager** • administrative assistant/secretary	• reporting, scheduling and distribution occupations • cleaners

General workplace skill sets: Critical for working in emerging sectors

Today's job seekers not only require specific work-related skills, but they also need good general workplace skill sets. This is even more critical for those wishing to succeed in emerging areas where changes tend to be faster or more dramatic.

Due to this pace of change across labour markets, Canadians also need to adopt a philosophy of life-long learning. They must keep on top of the general and job-specific knowledge and skills required for their occupation. For example:

- In the past, having to upgrade skills and knowledge on an ongoing basis was an integral part of the job in occupational areas such as medicine, engineering, law or various trades. Today, workers in these areas find that the pace, type and amount of change are increasing, making life-long learning even more essential.
- There are other occupational areas where workers in the past generally found it sufficient to keep abreast of changes through on-the-job experience after leaving school. However, they too must now maintain and upgrade their skills on a more continuous basis with additional courses or training.

Examples of workplace skill sets being demanded at increasing rates by employers from emerging areas, and more generally, are:

- **Flexibility and adaptability to change.** Included are the abilities to:
    - summarize and analyze information
    - withstand stress
    - accept criticism
    - work as part of a team
    - work in a multicultural environment
- **Independence.** Included are the abilities to act on one's own in the areas of:
    - learning
    - problem-solving
    - decision-making
    - taking calculated risks
- **Communications.** Included are the abilities to communicate well:
    - orally
    - in writing
    - independently
    - as part of a team

Some of these skills are also categorized as 'essential' or 'enabling' skills, defined as the kind of skills that people use to carry out a wide variety of everyday life and occupational tasks. They provide people with a foundation to learn other skills, and enhance people's ability to adapt to workplace change. In addition to some of the skills listed above are skills such as reading text, numeracy (math), and computer use. More information about essential skills, and profiles of these skills across various occupations (primarily from NOC Skill Levels C and D), can be found at www.hrdc-drhc.gc.ca/essentialskills.

Conclusion[6]

Canadians who are seeking work, or are already in the workplace, need to be aware of emerging sectors and occupations, which include both new occupations, and existing occupations experiencing high growth or significant change. This knowledge will help them make informed decisions about their futures such as where they are most likely to find work; or what kind of education/training they will need; or how their current work might change. Emerging occupations are accessible to most Canadians. Gathering more information about the nature of change in today's economy is also likely to help them better understand the types of skill sets and continuous learning that they need to prosper in the workplace.

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[6] A wide variety of sectors are represented by Sector Councils who focus on human resource issues relevant to their specific sector. Their Web sites, which may have additional information on emerging occupations or skill sets, as well as detailed profiles of other sectors, can be accessed at the following address: www.hrdc-drhc.gc.ca/sector.

Chapter 3

Key Economic Factors to Consider

Introduction

When making career or educational decisions, it is important that Canadians consider not only personal factors such as work-life preferences, talents, and interests, but also how such decisions will impact their labour market experiences or outcomes such as:

- Starting earnings profiles.
- Lifetime earnings profiles.
- Rate of return to education.
- Labour market accessibility.
- Labour mobility.

The objective of the following analysis is to examine how labour market outcomes differ depending on the level of education and field of study considered. The three labour market outcome measures discussed are:

- Starting and lifetime earnings profiles.
- Net benefits of a career or educational choice (rate of return to investing in post-secondary education).
- Labour market employability.

The intent is not to state whether a specific career or educational path is the best choice for an individual. Rather, this chapter provides information for job seekers and career planners to use, in addition to other information, when making these critical decisions.

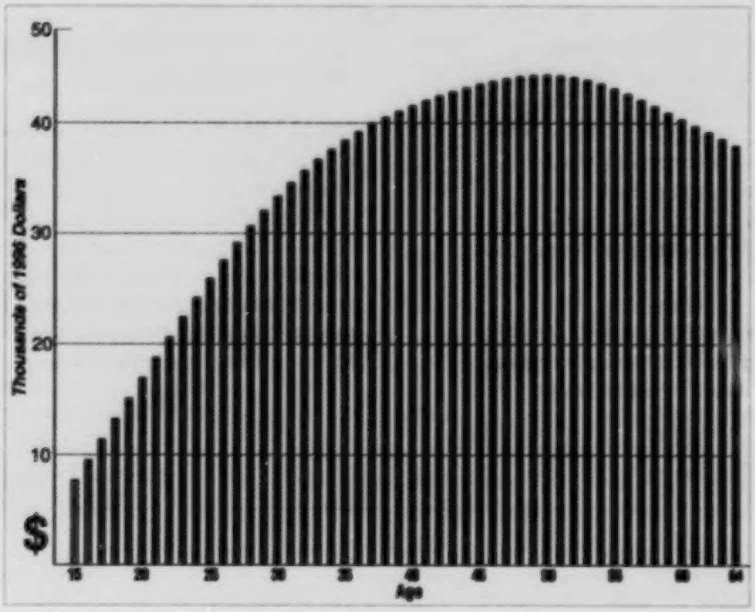
Profiles of Starting and Lifetime Earnings

How much a worker can earn as a starting salary in a specific job and over his/her lifetime, if he/she stayed in that job, depends on many factors, including:

- Individual skills, talents and interests.
- Individual level of education and area of study.
- Individual work-related experience.
- Hours of work in a specific job.
- General labour market conditions.
- The employer and specific job conditions.

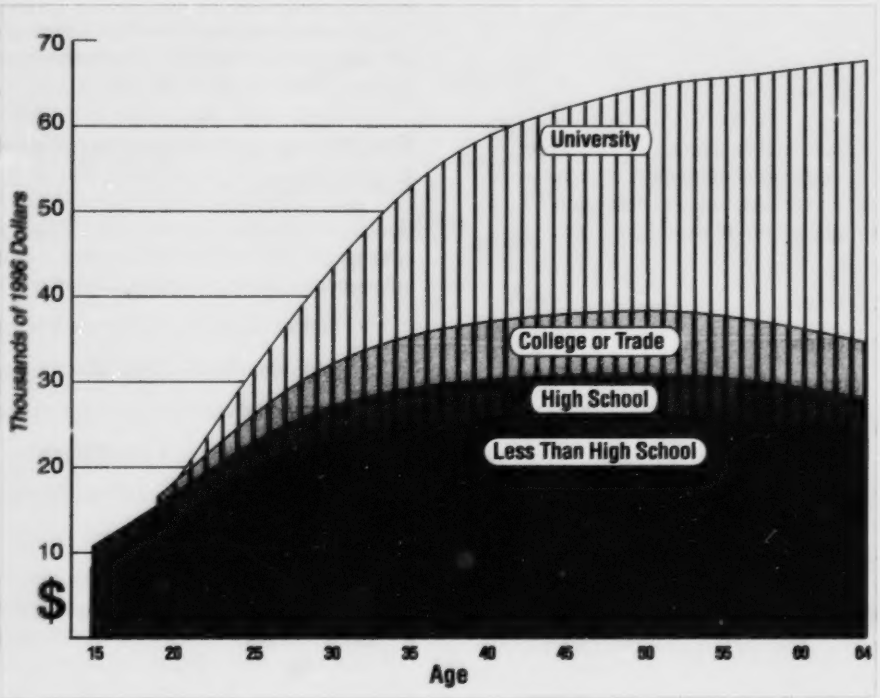
Generally, occupational earnings tend to follow a pattern over people's work lives. Earnings are generally low in the early working years and rise to a peak which may occur at different ages depending on the optimal combination of experience, skills and occupational labour market conditions. The general pattern for the workforce as a whole is illustrated in Graph 3.1.

Graph 3.1 — ***Lifetime Employment Earnings Profile – Total Workforce***



Source: 1996 Census. Data have been smoothed with a Hodrick-Prescott filter (Parameter=100).

Graph 3.2 — ***Lifetime Employment Earnings Profile by Skill Level***



Source: 1996 Census. Data have been smoothed with a Hodrick-Prescott filter (Parameter=100).

In addition, starting and lifetime earnings profiles are generally linked with levels of education and training. Occupations generally requiring post-secondary training have above-average starting and lifetime salaries, while those requiring high school or less generally have below-average starting and lifetime salaries. The lifetime employment earnings profiles for occupations from the four NOC (National Occupation Classification) education/skill levels are compared in Graph 3.2.

Although starting and lifetime earnings generally tend to be higher for progressively higher levels of education attained, earnings profiles of individuals with the same level of education can differ significantly depending on the field of study and occupation chosen.

Table 3.1 provides a sample of how earnings profiles can vary at each level of education. For example, at the university level, earnings profiles for occupations such as doctor or dentist are significantly higher than for occupations in the social sciences. It also indicates that although starting salaries may be similar, overall lifetime employment earnings can be quite different, as one can see by comparing the earnings profiles for architects versus librarians. A more detailed list of occupations can be found in Appendix B in Table A.3.1.

Table 3.1 — *Examples of Starting and Lifetime Employment Earnings, by Occupation and Skill Level*

NOC		Starting Earnings $	Lifetime Employment Earnings $
Overall Average for All Occupations		**20 600**	**1 597 200**
NOC	**Examples of Occupations generally requiring a University degree (Skill Level A)**		
311	Physicians, dentists and veterinarians	57 100	4 183 900
313	Pharmacists, dietitians and nutritionists	45 200	1 995 300
216	Mathematicians and computer programmers	36 500	1 973 700
111	Auditors, accountants and investment professionals	32 600	2 181 400
215	Architects, urban planners and land surveyors	27 800	1 877 500
511	Librarians, archivists, conservators and curators	27 200	1 485 500
	Average for Skill Level A	**34 800**	**1 994 100**
NOC	**Examples of Occupations generally requiring a College diploma (Skill Level B)**		
725	Plumbers, pipefitters and gas fitters	32 700	1 596 000
321	Medical technologists and technicians	29 200	1 604 900
723	Machinists and related occupations	28 800	1 661 000
421	Social services workers and occupations in education	23 900	1 344 700
522	Photographers, graphic arts technicians	20 900	1 409 200
124	Secretaries, recorders and transcriptionists	20 500	1 137 600
	Average for Skill Level B	**24 100**	**1 439 200**
NOC	**Examples of Occupations generally requiring a High School diploma (Skill Level C)**		
941	Machine operators & related workers in metal products	23 800	1 662 000
341	Assisting occupations in support of health services	21 300	1 020 300
741	Motor vehicle and transit drivers	18 400	1 410 500
642	Retail salespersons and sales clerks	15 700	1 151 200
647	Childcare and home support workers	14 400	757 100
645	Occupations in food and beverage service	12 800	728 600
	Average for Skill Level C	**18 500**	**1 220 500**
NOC	**Examples of Occupations generally requiring less than a High School diploma (Skill Level D)**		
663	Elemental medical and hospital assistants	25 400	1 108 000
861	Primary production labourers	22 500	1 383 700
665	Security guards and related occupations	19 500	1 116 000
667	Other attendants in travel, accommodation & recreation	15 400	1 128 000
666	Cleaners	14 700	1 072 000
661	Cashiers	11 800	837 000
	Average for Skill Level D	**15 200**	**1 099 800**
NOC	**Examples of Management Occupations**		
081	Managers in primary production (except agriculture)	40 500	2 967 700
021	Managers in engineering, architecture & information systems	37 200	2 577 200
031	Managers in health, education, social & community services	32 300	2 052 200
071	Managers in construction and transportation	31 700	1 930 000
012	Managers in financial and business services	28 800	2 411 700
062	Managers in retail trade	17 300	1 392 600
	Average for Management Occupations	**27 100**	**2 010 800**

Source: 1996 Census and John Appleby et al., 'Distribution of Rates of Return by Field of Study and Level of Education', Human Resources Development Canada, Applied Research Branch, fall 2000.

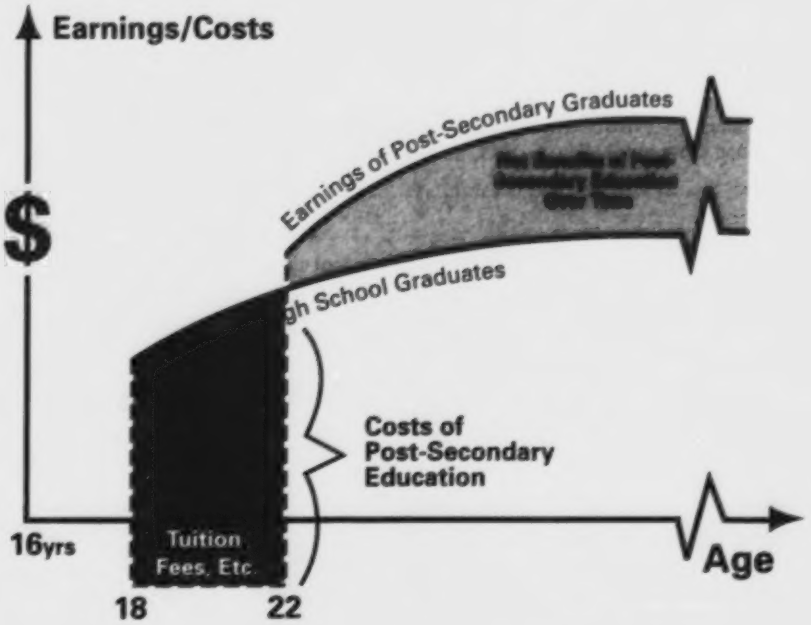
Rates of Return to Investing in a Post-secondary Education

Generally, investing in a post-secondary education is a sound financial decision. There are many reasons why people decide to spend time and money on post-secondary education, including:

- Interest in a specific career that requires a post-secondary qualification.
- Specific skills that can be developed only through post-secondary education or training.
- Consideration of education as an investment toward higher earnings. As seen in Table 3.1, starting salaries and lifetime earnings are generally higher for those with higher levels of education and training.

People considering a post-secondary education from a financial perspective can detail the costs and benefits of their investment. Figure 3.1 presents an overall picture of the benefits and costs associated with the decision of pursuing a post-secondary diploma relative to a high school diploma. Benefits include the extra earnings that the individual would make by continuing his/her education as opposed to entering the labour market immediately upon graduation from high school. Costs include tuition, books, and foregone earnings i.e. potential earnings that a person gives up if they continue their education rather than enter the labour market directly after high school.

Figure 3.1 — ***Profile of Relative Benefits and Costs Over Time – Post-secondary vs. High School Graduates***



Source: Graph adapted from "Labour Market Economics", Morley Gunderson and W. Craig Ridell, McGraw-Hill Ryerson, 1993.

M121

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Table 3.2 below illustrates a calculation of the rate of return to investing in post-secondary education by providing an example of how educational choices can impact lifetime employment earnings.

Table 3.2 — *Rate of Return to Education: Illustration of the case of two different educational profiles*

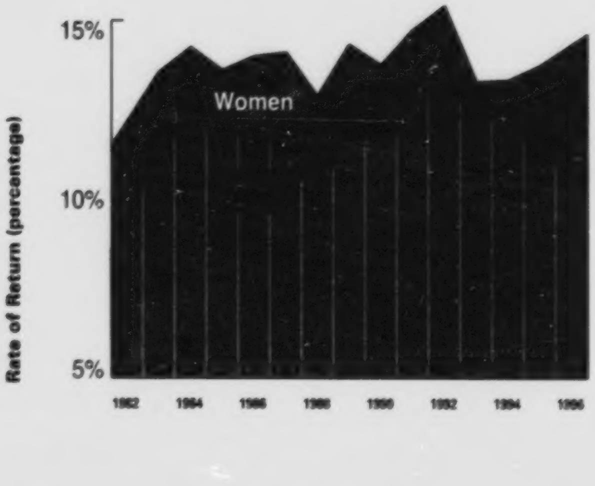
The Story of Two Students (graduating from high school in the same year)

	Ashley	Max
Educational/ work choice	Goes to university to become an electrical engineer.	Immediately enters the world of work as a machine operator in the food and beverage industry. Starting salary: $17,700*.
Costs	Annual costs are $27,700--$10,000 for tuition, books and living expenses plus earnings lost by not immediately entering the labour market, i.e., $17,700*. Total cost of pursuing a five-year honours degree in electrical engineering is $138,500 ($27,700 x 5 years).	Living expenses.
Benefits	As an electrical engineer, Ashley is expected to earn $2,279,400 over her working life, from age 23-65.	As a machine operator, Max is expected to earn $1,372,600 over his working life, from age 19-65.
Net Benefits	Ashley will earn $906,800 more in lifetime employment income than Max.	
Rate of return on post-secondary education	Ashley invested $138,500 and earned an additional $906,800- a 15.7% annual rate of return.	None.

* $17,700 is the average starting salary for a recent high school graduate in this occupation.

Considering both the financial costs and benefits, research results from Applied Research Branch in Human Resources Development Canada[1] suggest that, in general, Canadians profit from investing in a post-secondary education. For example, over the course of their working lives, university graduates will realize an average financial gain of 10% to 15% over and above what they would have earned with only a high school diploma. This is based on rates of return estimated during the 1981-1996 period, as presented in Graph 3.3. The difference between men and women can be explained by significant differences in the foregone earnings associated with the decision to pursue post-secondary education instead of working. Although women are increasingly present in the labour market, their average earnings are still below those of men. Thus, they generally sustain a smaller loss of potential income than men would. These lower overall 'costs' of pursuing post-secondary education translate into a higher rate of return for women.

Graph 3.3 — *Rate of Return to Education of a University Degree, when compared to a High School Diploma*



Source: Data from Statistics Canada – Survey of Consumer Finance and Centre for Education Statistics

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[1] John Appleby et al., 'Distribution of Rates of Return by Field of Study and Level of Education in Canada', Human Resources Development Canada, Applied Research Branch, fall 2000.

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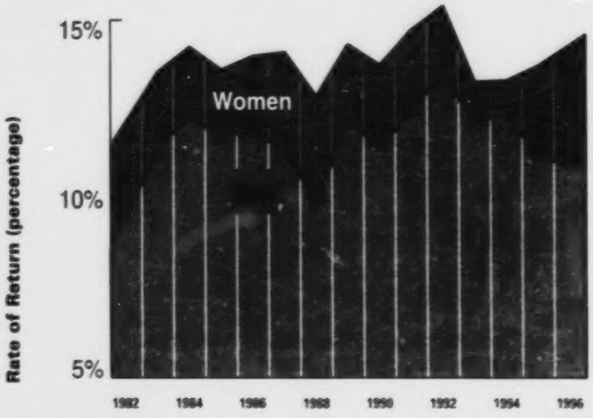

Source: Data from Statistics Canada – Survey of Consumer Finance and Centre for Education Statistics

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[1] John Appleby et al., 'Distribution of Rates of Return by Field of Study and Level of Education in Canada', Human Resources Development Canada, Applied Research Branch, fall 2000.

Research results show substantial differences in the rates of return for diverse fields of study and areas of specialization at the university and community college levels (see Tables 3.3 and 3.4).

Table 3.3 — *Examples of Distribution of Rates of Return to Education by Field of Study*

University Level (Undergraduate)[2]

Field of Study	Median (%)	Minimum/ Maximum (%)
Education		
Physical Education, Recreation & Tourism	8.1	1.7 to 17.6
Teaching	9.3	1.2 to 18.3
Counselling & Personal Development	12.8	2.2 to 26.8
Arts & Humanities		
Fine Arts	6.3	-3.4 to 14.9
History	9.0	1.6 to 19.9
English	9.1	1.4 to 18.1
Administration & Social Sciences		
Anthropology	6.7	-2.1 to 16.9
Sociology	8.3	1.0 to 18.4
Business & Commerce	13.1	5.8 to 24.4
Chemistry, Physical & Natural Sciences		
Agriculture	6.9	-1.8 to 15.4
Biology & Biochemistry	7.7	0.2 to 16.9
Physics	11.5	3.6 to 21.7
Architecture & Engineering		
Architecture	9.7	2.8 to 19.2
Forestry	9.6	3.0 to 18.4
Electronic Engineering	17.4	9.7 to 28.2
Health		
Rehabilitation Medicine	9.9	1.5 to 18.1
Nursing	12.6	2.6 to 25.4
Dentistry	21.4	12.1 to 33.2

Source: John Appleby et al., 'Distribution of Rates of Return by Field of Study and Level of Education in Canada', Human Resources Development Canada, Applied Research Branch, fall 2000.

The median return on a university degree varies from slightly more than 1% for religious studies; to a little over 6% for fine arts, music, anthropology and agriculture; to just over 20% for health care disciplines such as medicine and dentistry.

There are also significant differences in the rates of return within aggregate fields of study, i.e., health, engineering, natural sciences, social sciences, arts and humanities and education. For example, in social sciences, the rate of return is about half as high for anthropology (6.7%) as compared to law (15.9%) or economics (13.3%).

Rates of return for a community college diploma have a range of variation for different fields of study that is, overall, similar to that at the university level, i.e., the median return is between 2% to 23% at the community college level, and 1% to 23% for different fields of university study.

Table 3.4 — *Examples of Distribution of Rates of Return to Education by Field of Study*

College Level[2]

Field of Study	Median (%)	Minimum/ Maximum (%)
Education		
Counselling & Personal Development	2.0	-23 to 18
Physical Education	8.0	-8.2 to 27.9
Teaching	9.4	-5.6 to 31.3
Arts & Humanities		
Performing Arts	5.1	-25.3 to 23.7
Library Sciences & Museum Technology	8.5	-6.9 to 27.6
Journalism	16.1	1.6 to 37.1
Administration & Social Sciences		
Business & Commerce	11.8	-3.0 to 32.2
Social Services	16.3	-1.7 to 43.8
Agriculture & Domestic Science		
Agriculture	3.6	-17.9 to 23.4
Animal Husbandry	5.6	-14.6 to 24.0
Nutrition, Consumer & Domestic Science	6.2	-18.4 to 25.2
Architecture, Mathematics & Engineering		
Building Technology	6.1	-11.1 to 26.1
Civil Engineering Technologies	17.8	-1.0 to 37.7
Biological Resource Engineering	17.9	0.8 to 37.7
Health		
Nursing	8.8	-5.7 to 29.5
Medical Laboratory Technology	16.2	-0.08 to 38.7
Public Health, Epidemiology & Biostatistics	16.8	-0.3 to 47.8

Source: John Appleby et al., 'Distribution of Rates of Return by Field of Study and Level of Education in Canada', Human Resources Development Canada, Applied Research Branch, fall 2000.

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[2] Please note that these field of study titles may not correspond exactly to those used in *Part 2: Outlooks by Field of Study*, due to different data sources.

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[2] Please note that these field of study titles may not correspond exactly to those used in *Part 2: Outlooks by Field of Study*, due to different data sources.

Tables 3.3 and 3.4 also demonstrate that the return on investing in post-secondary education may vary considerably for people in the same field of study. The different medians and ranges between minimum and maximum rates of return indicate the variation that can occur among individuals.

For example, for university graduates, the widest variations are found in the arts and humanities, specifically:

- Fine arts: -3.4% to 14.9%.
- Music: -1.4% to 15.6%.
- Theology: -21.3% to 12.8%.

Negative rates of return[3] also occur for a proportion of graduates from other fields of study in the natural sciences (e.g. agriculture) and the social sciences (e.g. anthropology).

The variance in rates of return for individuals are greater for community college graduates than for those with university degrees when comparing the same field of study. In addition, at the community college level, there are more fields of study with negative rates of return.

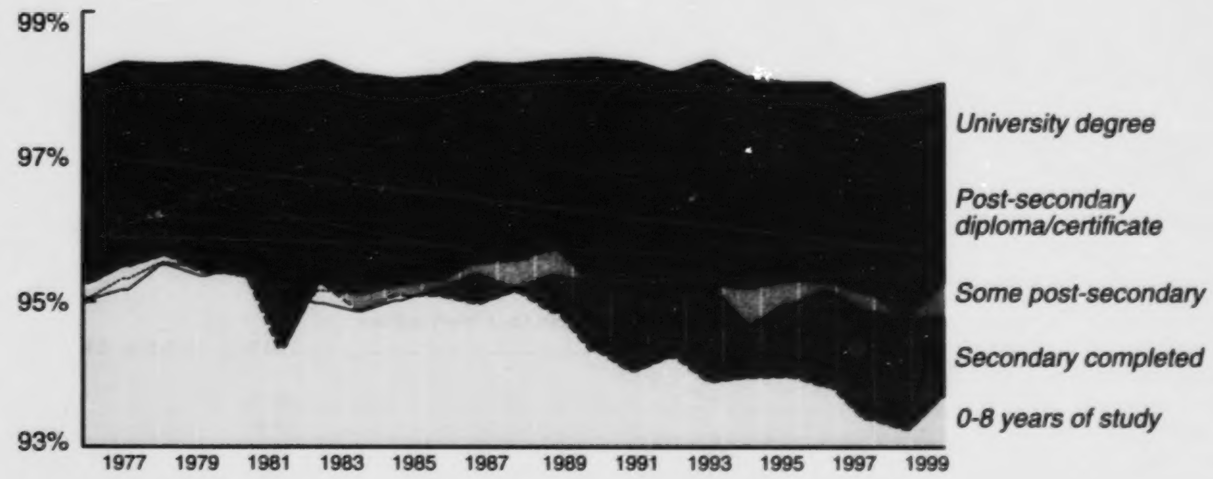
The wide variation in rates of return within the same field of study at the university and community college levels suggests that, in some cases, a post-secondary education does not, in itself, guarantee increased financial rewards.

Detailed lists of the rates of return to education for more fields of study can be found in Appendix B, in Table A.3.3 for university and Table A.3.4 for college.

Labour Market Employability and Unemployment

An individual's level of education affects his/her employability (i.e. higher probability of staying employed for a longer period). Graph 3.4 demonstrates that, over the past thirteen years, higher levels of education generally lead to better labour market employability.

Graph 3.4 — ***Probability of Staying Employed by Education Level, Total Workforce***



Source: Labour Force Survey.

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[3] A negative rate of return means that the individual is experiencing a net financial loss compared to what he/she would have earned with only a high school diploma.

In addition, an examination of the unemployment rate by level of education over the past three decades also suggests that the higher the level of education, the lower the unemployment rate.

Labour market employability is also largely influenced by individual occupational choices. In general, the average unemployment rate in 1998 was higher for occupations which require no post-secondary training -- i.e. high school diploma (7.2%) or less than high school (10.9%) -- than for occupations requiring post-secondary education -- i.e. management (2.8%), university degree (2.9 %), college or trade diploma or certificate (5.2%).

However, some occupations requiring community college or another post-secondary diploma have lower unemployment rates than those requiring a university degree. For example, technical occupations in electronics, electrical engineering and health care, which generally require a community college diploma, have lower unemployment rates than university professor and assistant, life science professional, architect, urban planner, land surveyor, and college and other vocational instructor.

Table 3.5 provides the average and range of unemployment rates for the 1996-98 period by level of education, with some sample occupations within each range. A full list of unemployment rates for all occupational groups by skill level can be found in Appendix B in Table A.3.5.

Table 3.5[4] — ***Distribution of Unemployment Rates by Skill Level***

	Average (%)	Minimum/ Maximum (%)
National Unemployment Rate	**6.0**	
Professional Occupations: those usually requiring a university degree (Skill Level A)	**2.9**	**0.6 to 5.1**
Sample Occupations		
Creative and Performing Artists	5.1%	
Architects, Urban Planners and Land Surveyors	4.0%	
Systems Analysts and Computer Programmers	2.7%	
Physicians, Dentists and Veterinarians	0.6%	
Technical, Paraprofessional, Skilled Occupations: those usually requiring a college/trade diploma (Skill Level B)	**5.2**	**1.1 to 19.4**
Sample Occupations		
Logging Machinery Operators	19.4%	
Chefs and Cooks	10.1%	
Sales and Services Supervisors	4.1%	
Police Officers and Firefighters	1.1%	
Intermediate Occupations: those usually requiring a high school diploma (Skill Level C)	**7.2**	**3.0 to 32.3**
Sample Occupations		
Other Fishing and Trapping Occupations	32.3%	
Heavy Equipment Operators	13.1%	
Clerical Occupations, General Office Skills	6.2%	
Assisting Occupations in Support of Health Services	3.0%	
Labouring and Elemental Occupations: those usually requiring less than high school graduation (Skill Level D)	**10.9**	**3.6 to 24.1**
Sample Occupations		
Primary Production Labourers	24.1%	
Public Workers Labourers	13.0%	
Cashiers	7.1%	
Elemental Medical and Hospital Assistants	3.6%	
Management Occupations	**2.8**	**0.9 to 10.0**
Sample Occupations		
Managers in Protective Services	10.0%	
Managers in Construction and Transport	3.3%	
Administrative Services Managers	2.4%	
Managers in Communications Services	0.9%	

Source: Labour Force Survey, average of the 1996-1998 period.

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[4] The unemployment rate for all occupations includes, as unemployed, only those unemployed persons who also held employment within the past twelve months, because they can be classified to an occupation. The result is that the unemployment rate in *Job Futures 2000* is considerably lower than that for the entire labour force which is often the one reported in the media.

In addition, an examination of the unemployment rate by level of education over the past three decades also suggests that the higher the level of education, the lower the unemployment rate.

Labour market employability is also largely influenced by individual occupational choices. In general, the average unemployment rate in 1998 was higher for occupations which require no post-secondary training -- i.e. high school diploma (7.2%) or less than high school (10.9%) -- than for occupations requiring post-secondary education -- i.e. management (2.8%), university degree (2.9 %), college or trade diploma or certificate (5.2%).

However, some occupations requiring community college or another post-secondary diploma have lower unemployment rates than those requiring a university degree. For example, technical occupations in electronics, electrical engineering and health care, which generally require a community college diploma, have lower unemployment rates than university professor and assistant, life science professional, architect, urban planner, land surveyor, and college and other vocational instructor.

Table 3.5 provides the average and range of unemployment rates for the 1996-98 period by level of education, with some sample occupations within each range. A full list of unemployment rates for all occupational groups by skill level can be found in Appendix B in Table A.3.5.

Table 3.5[4] — ***Distribution of Unemployment Rates by Skill Level***

	Average (%)	Minimum/ Maximum (%)
National Unemployment Rate	**6.0**	
Professional Occupations: those usually requiring a university degree (Skill Level A)	**2.9**	**0.6 to 5.1**
Sample Occupations		
Creative and Performing Artists	5.1%	
Architects, Urban Planners and Land Surveyors	4.0%	
Systems Analysts and Computer Programmers	2.7%	
Physicians, Dentists and Veterinarians	0.6%	
Technical, Paraprofessional, Skilled Occupations: those usually requiring a college/trade diploma (Skill Level B)	**5.2**	**1.1 to 19.4**
Sample Occupations		
Logging Machinery Operators	19.4%	
Chefs and Cooks	10.1%	
Sales and Services Supervisors	4.1%	
Police Officers and Firefighters	1.1%	
Intermediate Occupations: those usually requiring a high school diploma (Skill Level C)	**7.2**	**3.0 to 32.3**
Sample Occupations		
Other Fishing and Trapping Occupations	32.3%	
Heavy Equipment Operators	13.1%	
Clerical Occupations, General Office Skills	6.2%	
Assisting Occupations in Support of Health Services	3.0%	
Labouring and Elemental Occupations: those usually requiring less than high school graduation (Skill Level D)	**10.9**	**3.6 to 24.1**
Sample Occupations		
Primary Production Labourers	24.1%	
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Cashiers	7.1%	
Elemental Medical and Hospital Assistants	3.6%	
Management Occupations	**2.8**	**0.9 to 10.0**
Sample Occupations		
Managers in Protective Services	10.0%	
Managers in Construction and Transport	3.3%	
Administrative Services Managers	2.4%	
Managers in Communications Services	0.9%	

Source: Labour Force Survey, average of the 1996-1998 period.

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[4] The unemployment rate for all occupations includes, as unemployed, only those unemployed persons who also held employment within the past twelve months, because they can be classified to an occupation. The result is that the unemployment rate in *Job Futures 2000* is considerably lower than that for the entire labour force which is often the one reported in the media.

Conclusion

The decision to pursue a post-secondary education depends greatly on individual interests, skills, talents, and intended career path. However, financial considerations can play a role in making key educational and career choices.

In general, investing in a post-secondary diploma is a sound financial decision for a majority of Canadians. People with post-secondary education usually:

- have a higher starting and lifetime earnings;
- are more resilient to withstanding turbulence in the labour market; and,
- are more likely to experience favourable labour market conditions.

However, this investment is not a guarantee of financial profitability. Within the same level of education, there are variations in earnings profiles, labour market accessibility, and rates of return to education.

These variations depend on the field of study, occupational choice and other individual factors. Therefore, when making strategic career and educational decisions, Canadians must base their choices not only on personal factors such as skills, interests and talents, but also on reliable labour market information regarding specific occupations and the various labour market outcomes related to each occupation.

Chapter 4

Across Canada

Prospects for finding work in any occupation will vary over time, as well as across different sectors and locations. It is possible for an occupation to have a favourable outlook in one province but be less favourable in others. An overall rating at the national level will depend on the relative balance between any such disparities.

Why do labour markets and occupational outlooks vary? A number of factors may influence the short or longer term outlook for finding work in a particular occupation or geographical area, or within a particular timeframe. These include:

- ***Variations in the economic structure*** upon which a province, region or local area is built (e.g. manufacturing, natural resources, high-tech, services). Not only does the current structure imply that the composition of the workforce and the type of work available may vary, but also that changing conditions will have different labour market implications (e.g. a drop in the world oil price will impact Alberta's energy sector, and subsequently the size or composition of its workforce, more than that of Ontario).
- ***Different positions in the economic cycle.*** One province may be booming while another is struggling, depending on the major sources of economic activity.
- ***Institutional factors***, such as different political structures, government policies, laws or regulations.

Reviewing the current situation and the future outlook for an occupation at the national level helps to identify key overall trends. However, these trends may not exist, or may follow a different timetable, at provincial or local levels. National trends are important for occupations that generally exist in most locales across the country, such as engineers or computer programmers, or for occupations with skills that are relatively easy to transfer, such as management or secretarial occupations.

Location is an important factor to consider in the search for employment. If a person is closely tied to a particular area, it is important to have specific information on the labour market and work prospects in that area to help make an informed career decision. Or, if a person has a good idea of the kind of work he/she is looking for and is willing to relocate, they may need to compare various sources of information in order to find the location with the best prospects.

Therefore, to ensure you have the information that best fits the circumstances for the individual in question, it is advisable to consult and compare information about the world of work at national, provincial and local levels.

Sample Occupations with Favourable Outlooks by Province

To illustrate some of the similarities and differences that can occur across the country, refer to the following map to review a sample list of ten occupations with a favourable outlook for Canada, for each province, and for Yukon.[1] It is important to note that methodologies and forecast periods used to determine the sample occupations presented may differ. **Please refer to the brief Summary of Methodologies in Appendix C while examining the sample lists.**

We also encourage you to consult the provincial **Job Futures** or equivalent Internet sites provided with each list for additional information including profiles and outlooks for other occupations, and for more detail on methodologies.

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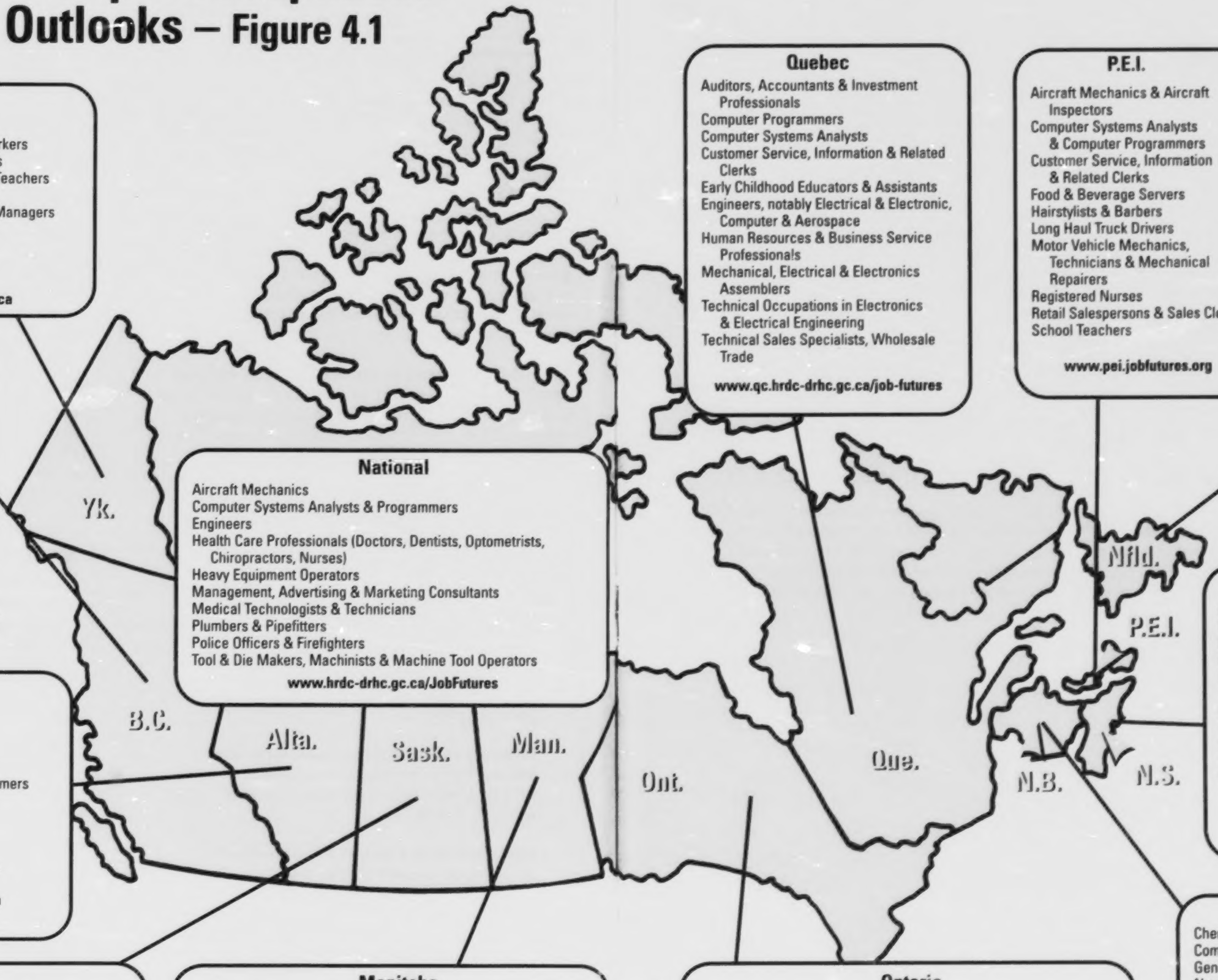
[1] This information is currently unavailable for Northwest Territories and Nunavut.

Across Canada – Sample Occupations with Favourable Outlooks – Figure 4.1



Yukon

- Accountants & Auditors
- Community & Social Services Workers
- Contractors & Supervisors, Trades
- Elementary & Secondary School Teachers
- Finance & Insurance Clerks
- Food Service & Accommodation Managers
- Policy & Program Professionals
- Registered Nurses
- Retail Trade Managers
- Secretaries

www.workfutures.yk.ca

British Columbia

- Assisting Occupations in Graphic & Digital Arts, & Technical Occupations in Motion Pictures, Television & Theatre
- Chefs & Cooks
- Computer Systems Analysts & Programmers
- Graphic Designers, Illustrating Artists, Artisans & Craftpersons
- Managers in Accommodation, Food & Retail Trade
- Professional Engineers
- Registered Nurses
- Social Workers; Community & Social Service Workers
- Technical Sales Specialists & Representatives, Wholesale

www.workfutures.bc.ca

Alberta

- Auditors, Accountants & Investment Professionals
- Civil, Mechanical, Electrical & Chemical Engineers
- Contractors & Supervisors, Trades & Related Workers
- Food Counter Attendants & Kitchen Helpers
- Mathematicians, Systems Analysts & Computer Programmers
- Medical Technologists & Technicians
- Nursing Supervisors & Registered Nurses
- Occupations in Food & Beverage Service
- Primary Production Labourers
- Secondary & Elementary School Teachers & Counsellors

www.ab.hrdc-drhc.gc.ca/lmi/main/futures.htm
www.alis.gov.ab.ca

Saskatchewan

- Auditors, Accountants & Investment Professionals
- Logging & Forestry Workers
- Machinery & Transportation Equipment Mechanics (except Motor Vehicle)
- Motor Vehicle & Transit Drivers
- Nurse Supervisors & Registered Nurses
- Pharmacists, Dietitians & Nutritionists
- Physicians, Dentists & Veterinarians
- Systems Analysts & Computer Programmers
- Technical Sales Specialists, Wholesale Trade
- Therapy & Assessment Professionals

www.sk.hrdc-drhc.gc.ca/lmi/en/menu/00000e.shtml

Manitoba

- Aircraft Maintenance Engineers (AME's)
- Aircraft Maintenance Technicians
- Computer Programmers
- Computer Systems Analyst
- Financial Auditors & Accountants
- Heavy Duty Equipment Mechanics
- Machinists
- Pharmacists
- Registered Nurses & Registered Psychiatric Nurses
- Truck Drivers

www.mb.hrdc-drhc.gc.ca/menu/lmi.shtml
www.edu.gov.mb.ca/tce/carjob/occ_car_info/occ_car_info.html

National

- Aircraft Mechanics
- Computer Systems Analysts & Programmers
- Engineers
- Health Care Professionals (Doctors, Dentists, Optometrists, Chiropractors, Nurses)
- Heavy Equipment Operators
- Management, Advertising & Marketing Consultants
- Medical Technologists & Technicians
- Plumbers & Pipefitters
- Police Officers & Firefighters
- Tool & Die Makers, Machinists & Machine Tool Operators

www.hrdc-drhc.gc.ca/JobFutures

Quebec

- Auditors, Accountants & Investment Professionals
- Computer Programmers
- Computer Systems Analysts
- Customer Service, Information & Related Clerks
- Early Childhood Educators & Assistants
- Engineers, notably Electrical & Electronic, Computer & Aerospace
- Human Resources & Business Service Professionals
- Mechanical, Electrical & Electronics Assemblers
- Technical Occupations in Electronics & Electrical Engineering
- Technical Sales Specialists, Wholesale Trade

www.qc.hrdc-drhc.gc.ca/job-futures

P.E.I.

- Aircraft Mechanics & Aircraft Inspectors
- Computer Systems Analysts & Computer Programmers
- Customer Service, Information & Related Clerks
- Food & Beverage Servers
- Hairstylists & Barbers
- Long Haul Truck Drivers
- Motor Vehicle Mechanics, Technicians & Mechanical Repairers
- Registered Nurses
- Retail Salespersons & Sales Clerks
- School Teachers

www.pei.jobfutures.org

Newfoundland

- Civil Engineers
- Computer Programmers
- Deck Officers, Water Transport
- Financial Auditors & Accountants
- General Practitioners & Family Physicians
- Pharmacists
- Registered Nurses
- Respiratory Therapists
- School & Guidance Counsellors
- Veterinarians

www.nf.hrdc-drhc.gc.ca
www.gov.nf.ca

Nova Scotia

- Computer Programmers
- Computer Systems Analysts
- General Practitioners & Family Physicians
- Graphic Designers & Illustrating Artists
- Managers in Engineering, Architecture, Science & Information Systems
- Professional Occupations in Business Services to Managers
- Nurse Supervisors & Registered Nurses
- Pharmacists
- Retail Salespersons & Sales Clerks
- Technical Sales Specialists, Wholesale Trade

www.ns.hrdc-drhc.gc.ca/english/index.htm
www.ednet.ns.ca/educ/career/

New Brunswick

- Chemical Engineers
- Computer Systems Analysts
- General Practitioners
- Non-Technical Sales Representative, Wholesale Trade
- Nurses
- Pharmacists
- Physiotherapists
- Professional Occupations in Business Services to Management
- Secondary School Teachers
- Translators, Terminologists, & Interpreters

www.nb.hrdc-drhc.gc.ca/common/lmi/jobf/nofrmij_e.html

Ontario

- Chefs
- Computer Engineers
- Computer Systems Analysts & Programmers
- Electrical & Electronics Engineering Technologists & Technicians
- Machinists & Machining & Tooling Inspectors
- Mechanical Engineers
- Mechanical & Industrial Engineering & Manufacturing Technologists/Technicians
- Registered Nurses
- Secondary & Elementary School Teachers
- Tool & Die Makers

www.on.hrdc-drhc.gc.ca/english/lmi/eaid/occ.info/ojf/jobf_e.html
www.edu.gov.on.ca/eng/career/labmark.html

Chapter 5

Overview of Job Futures Outlooks

Introduction

This chapter builds on the general labour market trends discussed in Chapter 1 which were presented from various perspectives – by aggregate industrial and occupational groups, as well as by aggregate education and skill levels – and relates them to the detailed outlooks provided in *Part 1: Outlooks by Occupation* and *Part 2: Outlooks by Field of Study* of the *Job Futures 2000* suite.

Section 5.1, 'Overview of Outlooks by Occupation', provides a summary of overall trends and prospects for finding work related to the current and future occupational labour market conditions detailed in the 211 profiles in *Part1: Outlooks by Occupation.* Section 5.2, 'Overview of Outlooks by Field of Study', provides a summary of overall trends and prospects for finding work related to the current and future labour market conditions for recent post-secondary school graduates detailed in the 155 profiles in *Part 2: Outlooks by Field of Study.*

5.1 Overview of Outlooks by Occupation

Table 5.1.1 presents the average rating of occupational labour market conditions in 1998 and 2004, aggregated by skill level and skill type. Skill level refers to the minimum level of education and training generally required to work in these occupations. The skill type of an occupation refers to the broad industry category in which the occupation is concentrated. Further information on occupational skill levels and skill types is available in *Part 1: Outlooks by Occupation,* in "Understanding the Occupational Profiles", in the 'About the National Occupational Classification (NOC)' section.

Table 5.1.1 — ***Summary Table of Occupational Labour Market Conditions – Current and 2004***

Skill Types	**Skill Levels** **Managerial**	**Professional**	**Technical, Paraprofessional & Skilled**	**Intermediate**	**Labouring and Elemental**	**All**
	Current - **2004**	Current - **2004**	Current - **2004**	Current - **2004**	Current - **2004**	Current - **2004**
Business, Finance & Administration	good - **good**	good - **good**	good - **good**	fair - **fair**	--	good - **good**
Natural & Applied Sciences	good - **good**	good - **good**	good - **good**	--	--	good - **good**
Health	good - **good**	good - **good**	fair - **fair**	fair - **fair**	--	good - **good**
Social Science, Education, Government Services & Religion	good - **good**	fair - **fair**	fair - **fair**	--	--	fair - **fair**
Art, Culture, Recreation & Sport	good - **good**	fair - **fair**	fair - **fair**	--	--	fair - **fair**
Sales & Services	good - **good**	--	fair - **good**	fair - **limited**	limited - **limited**	fair - **limited**
Trades, Transport & Equipment Operators	fair - **good**	--	fair - **fair**	fair - **fair**	limited - **limited**	fair - **fair**
Primary Industry	good - **fair**	--	fair - **fair**	limited - **limited**	limited - **limited**	fair - **fair**
Processing, Manufacturing & Utilities	good - **good**	--	good - **good**	fair - **fair**	limited - **limited**	fair - **fair**
All	good - **good**	good - **good**	fair - **fair**	fair - **fair**	limited - **limited**	fair - **fair**

Source: "Canadian Occupational Projection System (COPS), 1999 Reference Scenario", T-99-1E, Applied Research Branch, HRDC.

See definitions of "Good", "Fair" and "Limited" in the "Glossary of Terms".

M121

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5.1.1 Overview by Skill Level

This section provides information on occupational labour market conditions from an aggregate skill-level perspective. There are five skill levels: managerial; professional (usually requires a university degree); technical, paraprofessional and skilled (usually requires a community college certificate or diploma or apprenticeship); intermediate (usually requires high school graduation); and labouring and elemental (usually requires less than high school graduation).

Each of the five sub-sections below provides an overview of the current and future outlooks for finding work at that skill level, and two summary graphs: the first indicates the distribution of occupations in that skill level across the nine skill types, and the second provides an indication of the largest occupations and their share of employment within that skill level.

By their nature, aggregate outlooks represent an average of the factors used to determine the detailed outlooks for the underlying occupations. For further occupational detail or to get an idea of which occupations within a skill level have outlooks that differ from the overall ratings, refer to the individual profiles in *Part 1: Outlooks by Occupation*, or to the *Job Futures 2000* web site: www.hrdc-drhc.gc.ca/JobFutures. The 'Overview by Skill Level' section on the website also contains tables providing additional explanations of why an outlook may differ from the overall rating.

Management Occupations

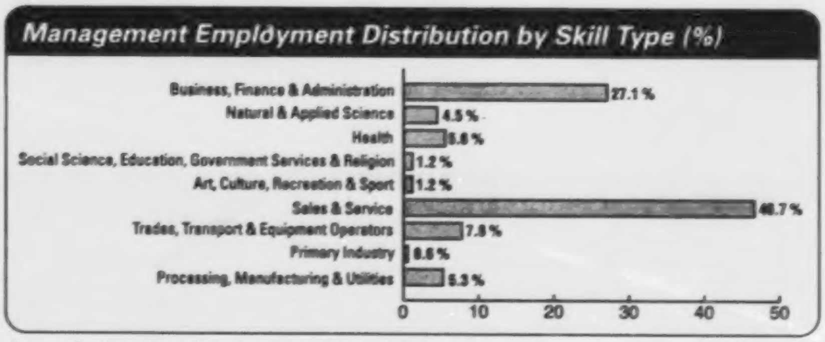
17% of new jobs created over the 1999-2004 period are expected to be in management occupations....

The management occupations accounted for 11.1% (1,476,606) of total 1998 non-student employment.

Graph 5.1.1 highlights the fact that the largest share (47%) of managers is in the sales and service skill type. Graph 5.1.2 indicates that the largest occupation in this grouping is retail trade managers, accounting for approximately 27% of all managers.

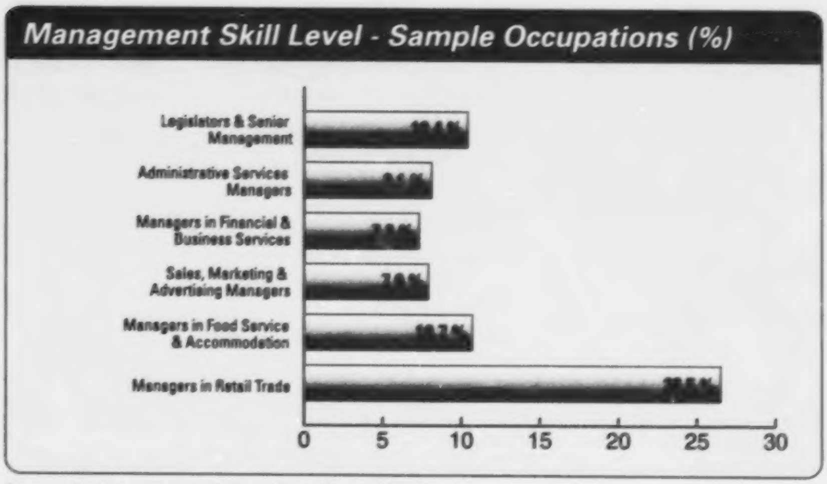
Currently labour market conditions for management occupations are rated as *good*. This rating follows from the fact that the unemployment rate for this occupational group is about one-half the economy-wide average and earnings are 16% above average. Over the 1999 to 2004 projection period labour market conditions are expected to remain *good*, although the number of new job seekers is expected to slightly exceed the number of new job openings.

Graph 5.1.1



Source: Statistics Canada, Labour Force Survey (1998)

Graph 5.1.2



Source: Statistics Canada, Labour Force Survey (1998)

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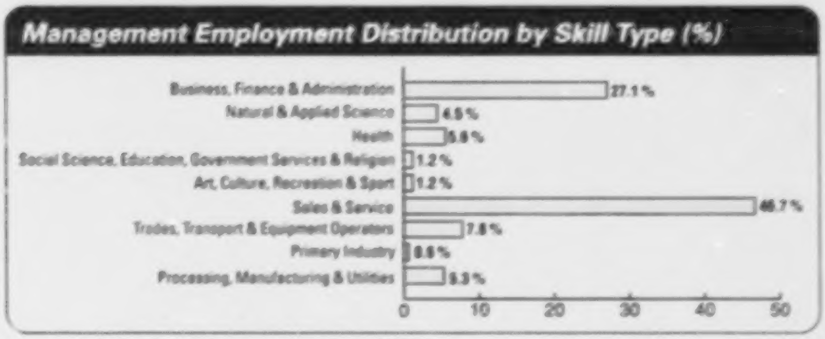
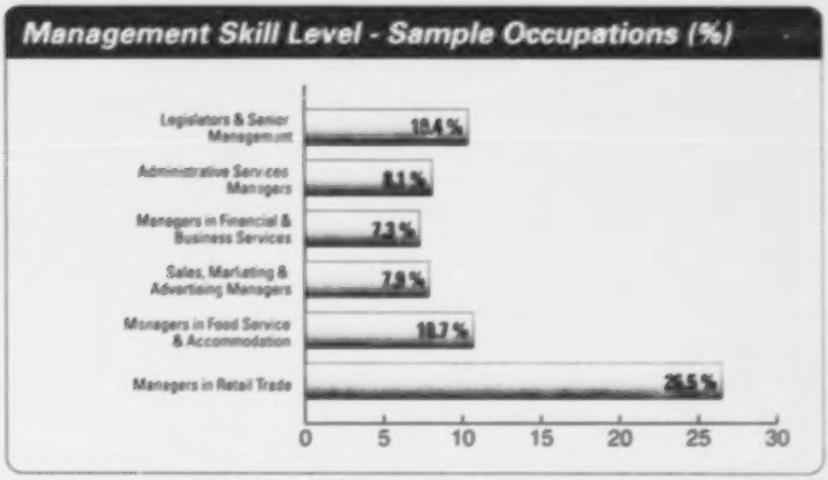


Management Employment Distribution by Skill Type (%)

Source: Statistics Canada, Labour Force Survey (1998)

Graph 5.1.2



Management Skill Level - Sample Occupations (%)

Source: Statistics Canada, Labour Force Survey (1998)

Professional Occupations — Skill Level A

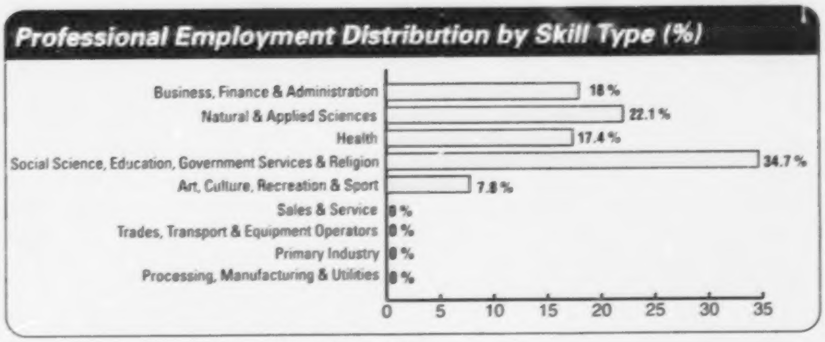
23% of new jobs created over the 1999-2004 period are expected to be in occupations generally requiring a university degree....

Occupations requiring a university degree or diploma accounted for 16.7% (2,238,687 people) of total 1998 non-student employment.

Graph 5.1.3 highlights the fact that the largest share (35%) of professional occupations is in the social science, education and government skill type. Graph 5.1.4 indicates that the largest occupation in this grouping is elementary and secondary school teachers and counsellors, accounting for approximately 17% of employment in professional occupations.

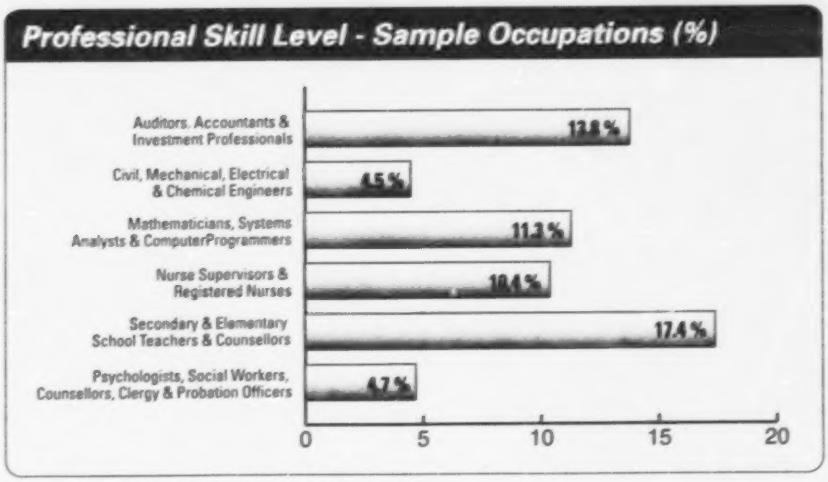
Currently labour market conditions for professional occupations are rated as *good.* This rating follows from the fact that the unemployment rate for this occupational group is about one-half the economy-wide average and earnings are 19% above average. Over the 1999 to 2004 projection period labour market conditions are expected to remain *good,* although the number of new job seekers is expected to slightly exceed the number of new job openings.

Graph 5.1.3



Source: Statistics Canada, Labour Force Survey (1998)

Graph 5.1.4



Source: Statistics Canada, Labour Force Survey (1998)

Technical, Paraprofessional and Skilled Occupations — Skill Level B

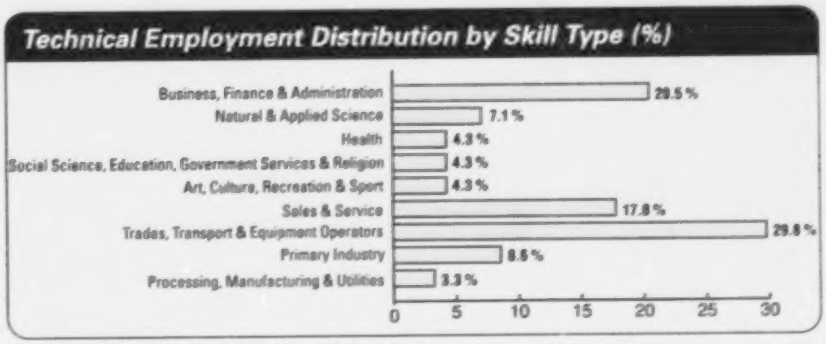
32% of new jobs created over the 1999-2004 period are expected to be in occupations generally requiring a community college diploma or apprenticeship training....

Occupations requiring a community college or trade certificate accounted for 31.8% (4,243,749 people) of total 1998 non-student employment.

Graph 5.1.5 highlights the fact that the largest share (30%) of these occupations is in the trades and transport skill type although Graph 5.1.6 indicates that the largest occupation in this grouping is secretaries, accounting for approximately 8% of employment in technical, paraprofessional and skilled occupations.

Currently labour market conditions for technical, paraprofessional and skilled occupations are rated as *fair.* This rating follows from the fact that the unemployment rate and earnings in these occupations are about the same as those of the economy-wide averages. Over the 1999 to 2004 projection period labour market conditions are expected to remain *fair,* although the number of new job openings is expected to slightly exceed the number of new job seekers.

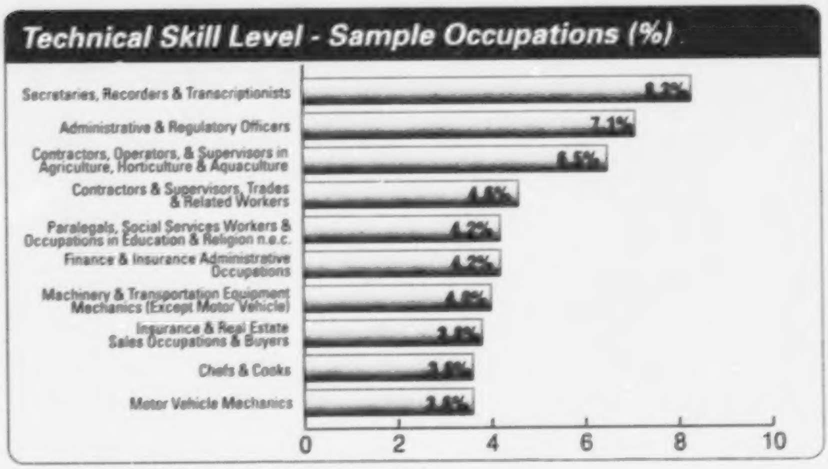
Graph 5.1.5



Technical Employment Distribution by Skill Type (%)

Source: Statistics Canada, Labour Force Survey (1998)

Graph 5.1.6



Technical Skill Level - Sample Occupations (%)

Source: Statistics Canada, Labour Force Survey (1998)

Professional Occupations — Skill Level A

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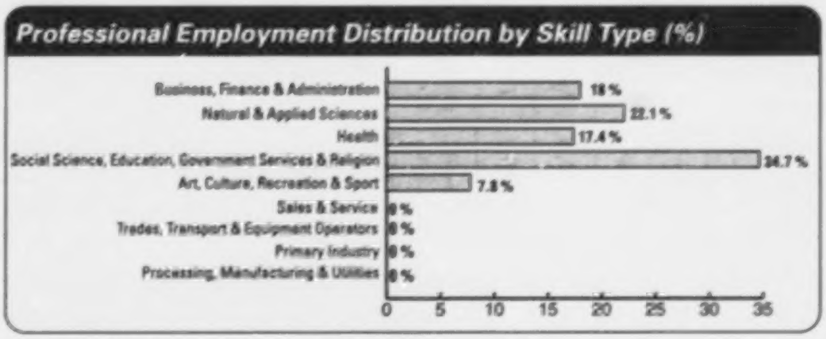
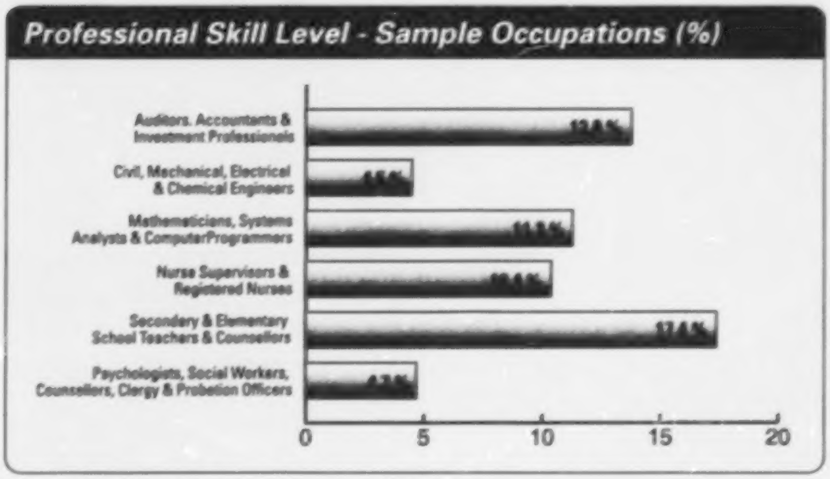
Graph 5.1.3



Source: Statistics Canada, Labour Force Survey (1998)

Graph 5.1.4



Source: Statistics Canada, Labour Force Survey (1998)

Technical, Paraprofessional and Skilled Occupations — Skill Level B

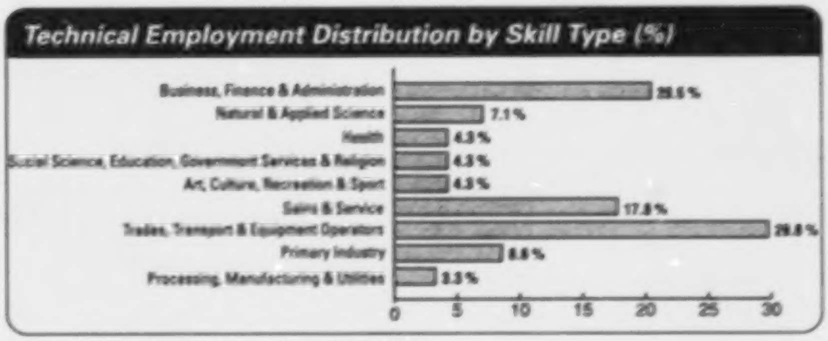
32% of new jobs created over the 1999-2004 period are expected to be in occupations generally requiring a community college diploma or apprenticeship training....

Occupations requiring a community college or trade certificate accounted for 31.8% (4,243,749 people) of total 1998 non-student employment.

Graph 5.1.5 highlights the fact that the largest share (30%) of these occupations is in the trades and transport skill type although Graph 5.1.6 indicates that the largest occupation in this grouping is secretaries, accounting for approximately 8% of employment in technical, paraprofessional and skilled occupations.

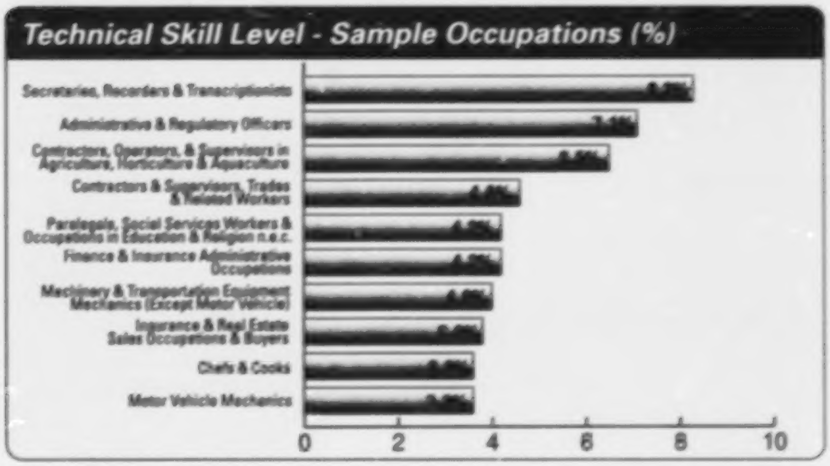
Currently labour market conditions for technical, paraprofessional and skilled occupations are rated as *fair.* This rating follows from the fact that the unemployment rate and earnings in these occupations are about the same as those of the economy-wide averages. Over the 1999 to 2004 projection period labour market conditions are expected to remain *fair,* although the number of new job openings is expected to slightly exceed the number of new job seekers.

Graph 5.1.5


Technical Employment Distribution by Skill Type (%)

Source: Statistics Canada, Labour Force Survey (1998)

Graph 5.1.6


Technical Skill Level - Sample Occupations (%)

Source: Statistics Canada, Labour Force Survey (1998)

Intermediate Occupations — Skill Level C

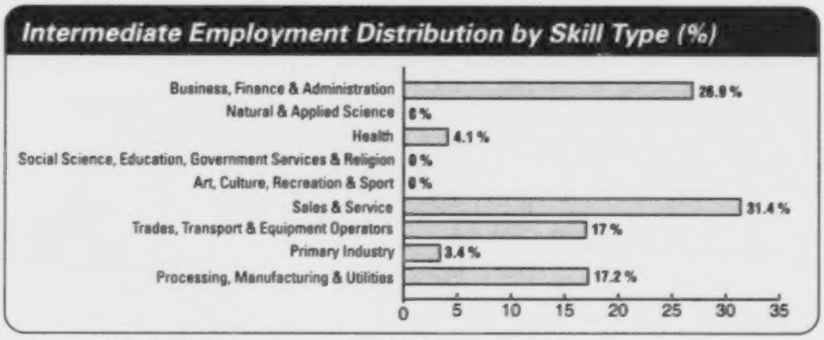
22% of new jobs created over the 1999-2004 period are expected to be in occupations generally requiring high school completion….

Occupations requiring a minimum of high school completion accounted for 30.1% (4,019,364 people) of total 1998 non-student employment.

Graph 5.1.7 highlights the fact that the largest share (31%) of these occupations is in the sales and service skill type. Graph 5.1.8 indicates that the largest occupations in this grouping are retail salespersons and motor vehicle and transit drivers, accounting for approximately 10% each of employment in intermediate occupations.

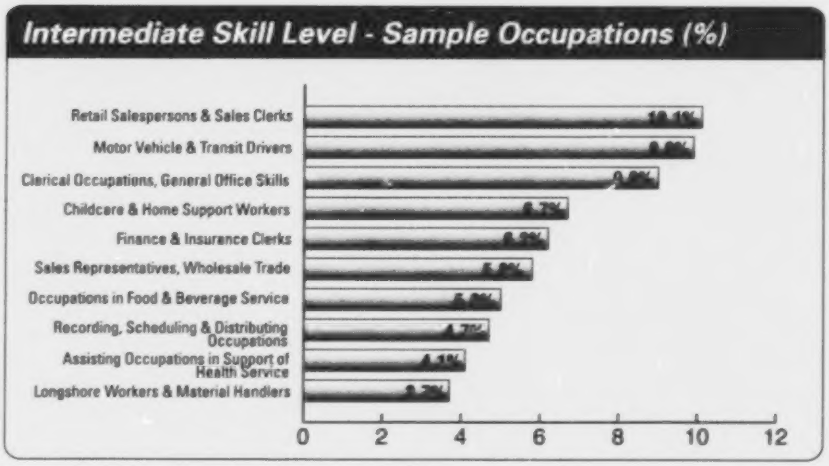
Currently labour market conditions for intermediate occupations are rated as *fair*. This rating follows from the fact that the unemployment rate and earnings in these occupations are about the same as those of the economy-wide averages. Over the 1999 to 2004 projection period labour market conditions are expected to remain *fair*, although the number of new job seekers is expected to slightly exceed the number of new job openings.

Graph 5.1.7



Source: Statistics Canada, Labour Force Survey (1998)

Graph 5.1.8



Source: Statistics Canada, Labour Force Survey (1998)

Labouring and Elemental Occupations — Skill Level D

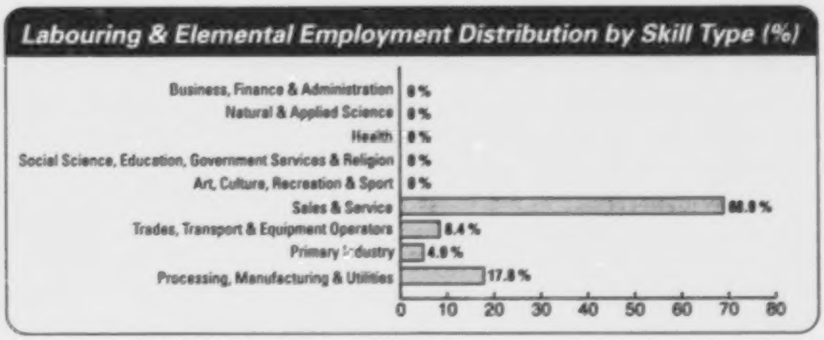
6% of new jobs created over the 1999-2004 period are expected to be in occupations generally requiring less than high school completion….

Occupations requiring some high school training accounted for 10.3% (1,387,045 people) of total 1998 non-student employment.

Graph 5.1.9 highlights the fact that the largest share (69%) of these occupations is in the sales and service skill type. Graph 5.1.10 indicates that the largest occupation in this grouping is cleaners, accounting for approximately 25% of employment in labouring and elemental occupations.

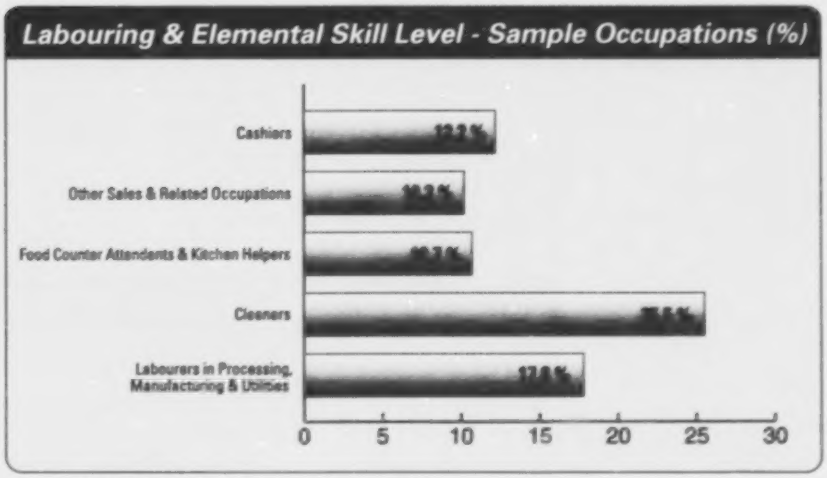
Currently labour market conditions for labouring and elemental occupations are rated as *limited.* This rating follows from the fact that the unemployment rate is almost double the economy-wide average and earnings in these occupations are about 25% below average. Over the 1999 to 2004 projection period labour market conditions are expected to remain *limited,* as the number of new job seekers is expected to slightly exceed the number of new job openings.

Graph 5.1.9



Source: Statistics Canada, Labour Force Survey (1998)

Graph 5.1.10



Source: Statistics Canada, Labour Force Survey (1998)

Intermediate Occupations — Skill Level C

22% of new jobs created over the 1999-2004 period are expected to be in occupations generally requiring high school completion....

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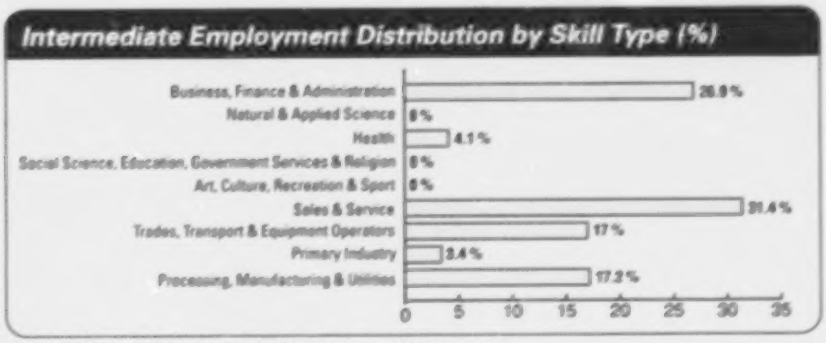
Graph 5.1.7 highlights the fact that the largest share (31%) of these occupations is in the sales and service skill type. Graph 5.1.8 indicates that the largest occupations in this grouping are retail salespersons and motor vehicle and transit drivers, accounting for approximately 10% each of employment in intermediate occupations.

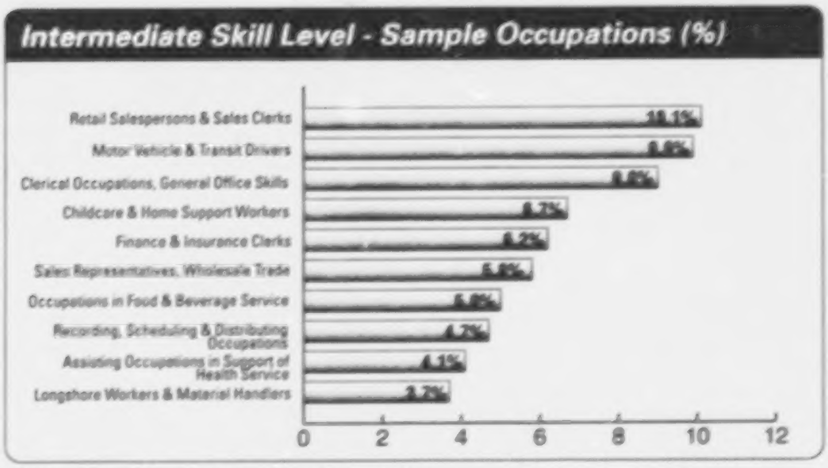
Currently labour market conditions for intermediate occupations are rated as *fair*. This rating follows from the fact that the unemployment rate and earnings in these occupations are about the same as those of the economy-wide averages. Over the 1999 to 2004 projection period labour market conditions are expected to remain *fair*, although the number of new job seekers is expected to slightly exceed the number of new job openings.

Graph 5.1.7



Source: Statistics Canada, Labour Force Survey (1998)

Graph 5.1.8



Source: Statistics Canada, Labour Force Survey (1998)

Labouring and Elemental Occupations — Skill Level D

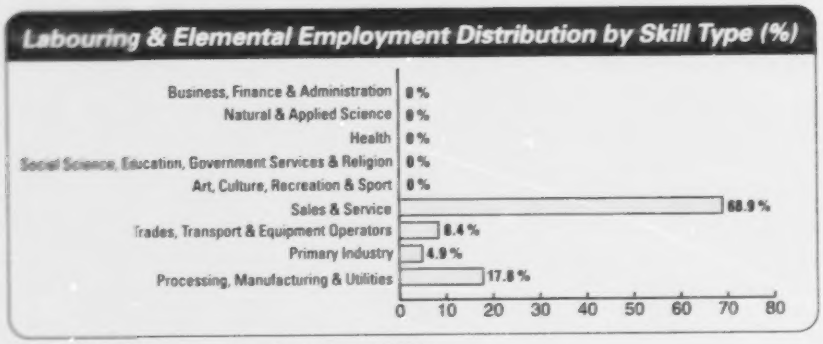
6% of new jobs created over the 1999-2004 period are expected to be in occupations generally requiring less than high school completion....

Occupations requiring some high school training accounted for 10.3% (1,387,045 people) of total 1998 non-student employment.

Graph 5.1.9 highlights the fact that the largest share (69%) of these occupations is in the sales and service skill type. Graph 5.1.10 indicates that the largest occupation in this grouping is cleaners, accounting for approximately 25% of employment in labouring and elemental occupations.

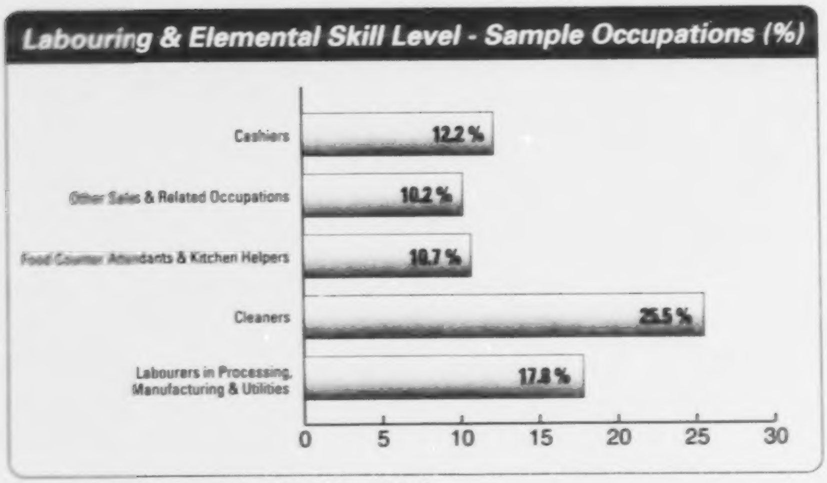
Currently labour market conditions for labouring and elemental occupations are rated as *limited.* This rating follows from the fact that the unemployment rate is almost double the economy-wide average and earnings in these occupations are about 25% below average. Over the 1999 to 2004 projection period labour market conditions are expected to remain *limited*, as the number of new job seekers is expected to slightly exceed the number of new job openings.

Graph 5.1.9


Labouring & Elemental Employment Distribution by Skill Type (%)

Source: Statistics Canada, Labour Force Survey (1998)

Graph 5.1.10


Labouring & Elemental Skill Level - Sample Occupations (%)

Source: Statistics Canada, Labour Force Survey (1998)

5.1.2 Overview by Skill Type

This section provides information on occupational labour market conditions from an aggregate skill-type perspective. Occupations are grouped into nine skill types or broad industrial groupings: business, finance and administration; natural and applied sciences; health; social science, education, government service and religion; art, culture, recreation and sport; sales and service; trades, transport and equipment; primary industry; and processing, manufacturing and utilities.

Each of the nine sub-sections below provides an overview of the current and future outlooks for finding work in that skill type, and two summary graphs: the first indicates the distribution of occupations in that skill type across the five skill levels, and the second provides an indication of the largest occupations and their share of employment relative to all workers within that skill type.

By their nature, aggregate outlooks represent an average of the factors used to determine the detailed outlooks for the underlying occupations. For further occupational detail or to get an idea of which occupations within a skill type have outlooks that differ from the overall ratings, refer to the individual profiles in *Part 1: Outlooks by Occupation*, or to the *Job Futures 2000* web site: www.hrdc-drhc.gc.ca/JobFutures. The 'Overview by Skill Type' section on the website also contains tables providing additional explanations of why an outlook may differ from the overall rating.

Business, Finance and Administration Occupations — Skill Type 1

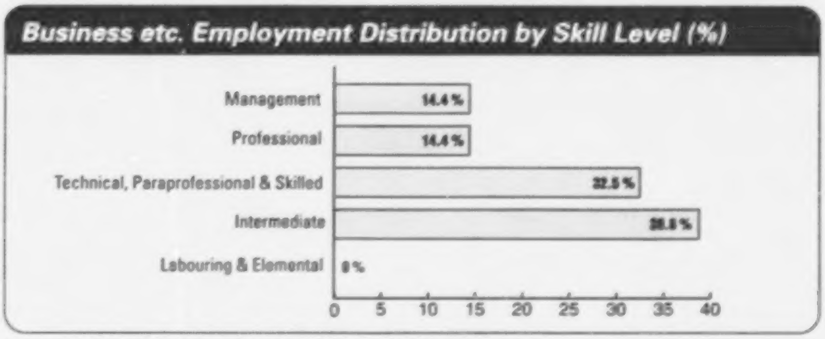
14% of new jobs created over the 1999-2004 period are expected to be in business, finance and administration occupations....

The business, finance and administration skill type accounted for 20.9% (2,791,714 people) of total 1998 non-student employment.

Graph 5.1.11 highlights the fact that all of these occupations require at least high school graduation and 61% require additional education or training. Graph 5.1.12 indicates that the largest occupation in this grouping is general clerks, accounting for 13% of employment in business, finance and administration.

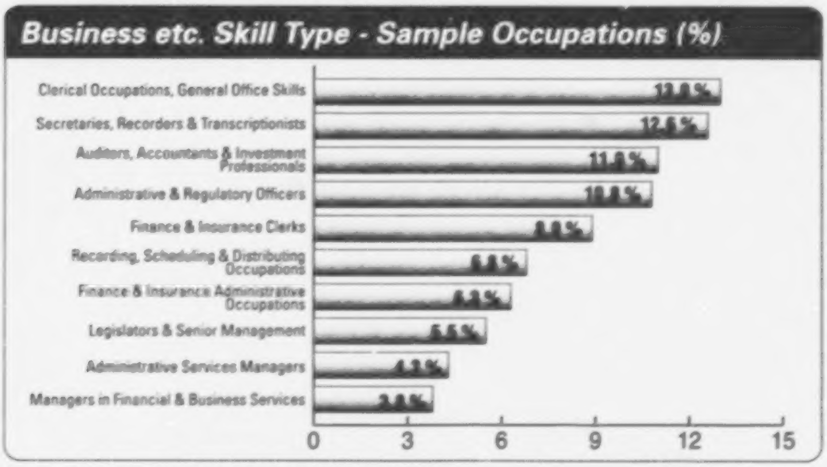
Currently labour market conditions in business, finance and administration are rated as *good*. This rating follows from the fact the unemployment rate in these occupations is about two-thirds that of the economy-wide rate (6%) and earnings are about the same as average. Over the 1999 to 2004 projection period labour market conditions are expected to remain *good*, more as a result of weak growth in the number of new job seekers as opposed to above-average growth in the number of new job openings.

Graph 5.1.11



Source: Statistics Canada, Labour Force Survey (1998)

Graph 5.1.12



Source: Statistics Canada, Labour Force Survey (1998)

Natural and Applied Science and Related Occupations — Skill Type 2

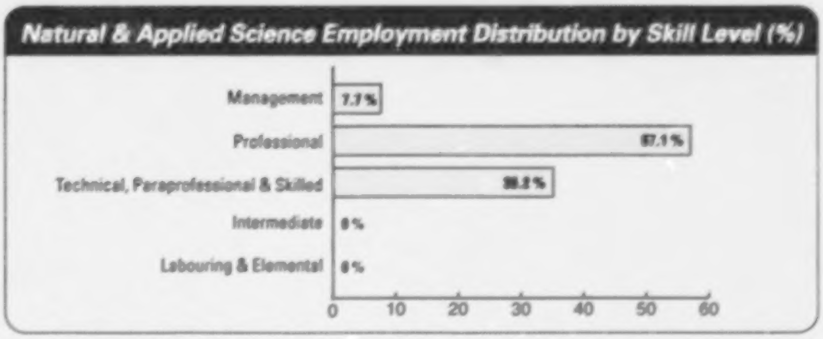
11% of new jobs created over the 1999-2004 period are expected to be in the natural and applied science occupations....

The natural and applied science skill type accounted for 6.5% (863,954 people) of total 1998 non-student employment.

Graph 5.1.13 highlights the fact that a large share (57%) of these occupations require a university degree. Graph 5.1.14 indicates that the largest occupation in this grouping is systems analysts, computer programmers, mathematicians and actuaries, accounting for approximately 29% of employment in natural and applied sciences.

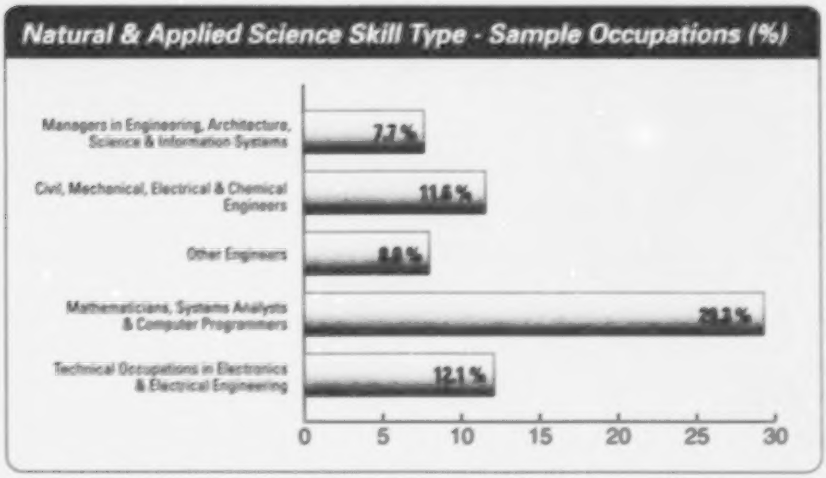
Currently labour market conditions in natural and applied sciences are rated as *good*. This rating follows from the fact that the unemployment rate in these occupations is about three-fifths that of the economy-wide rate (6%) and earnings are about 20% higher than average. Over the 1999 to 2004 projection period labour market conditions are expected to remain *good*, the result of above-average growth in the creation of new jobs, an above-average rate of retirement and below-average growth in the number of new job seekers, especially school leavers.

Graph 5.1.13


Natural & Applied Science Employment Distribution by Skill Level (%)

Source: Statistics Canada, Labour Force Survey (1998)

Graph 5.1.14


Natural & Applied Science Skill Type - Sample Occupations (%)

Source: Statistics Canada, Labour Force Survey (1998)

5.1.2 Overview by Skill Type

This section provides information on occupational labour market conditions from an aggregate skill-type perspective. Occupations are grouped into nine skill types or broad industrial groupings: business, finance and administration; natural and applied sciences; health; social science, education, government service and religion; art, culture, recreation and sport; sales and service; trades, transport and equipment; primary industry; and processing, manufacturing and utilities.

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Graph 5.1.11 highlights the fact that all of these occupations require at least high school graduation and 61% require additional education or training. Graph 5.1.12 indicates that the largest occupation in this grouping is general clerks, accounting for 13% of employment in business, finance and administration.

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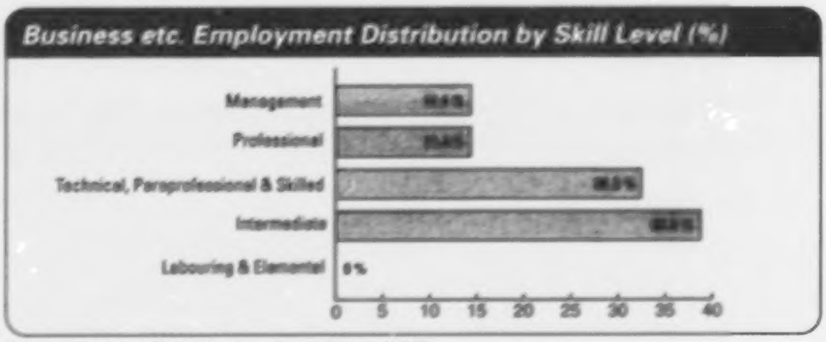
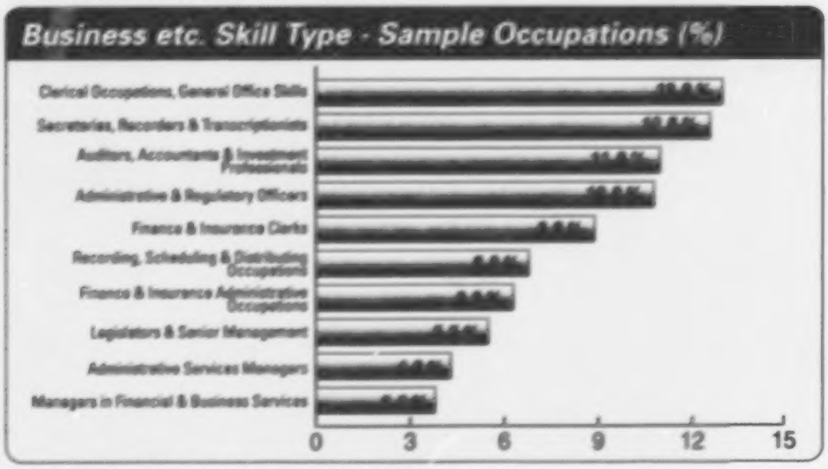
Graph 5.1.11


Business etc. Employment Distribution by Skill Level (%)

Source: Statistics Canada, Labour Force Survey (1998)

Graph 5.1.12


Business etc. Skill Type - Sample Occupations (%)

Source: Statistics Canada, Labour Force Survey (1998)

Natural and Applied Science and Related Occupations — Skill Type 2

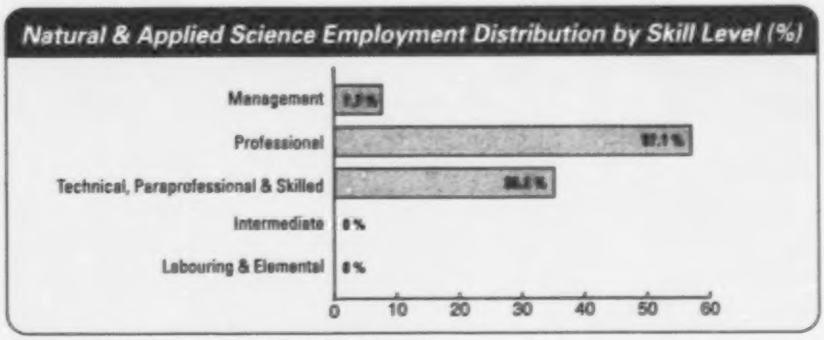
11% of new jobs created over the 1999-2004 period are expected to be in the natural and applied science occupations....

The natural and applied science skill type accounted for 6.5% (863,954 people) of total 1998 non-student employment.

Graph 5.1.13 highlights the fact that a large share (57%) of these occupations require a university degree. Graph 5.1.14 indicates that the largest occupation in this grouping is systems analysts, computer programmers, mathematicians and actuaries, accounting for approximately 29% of employment in natural and applied sciences.

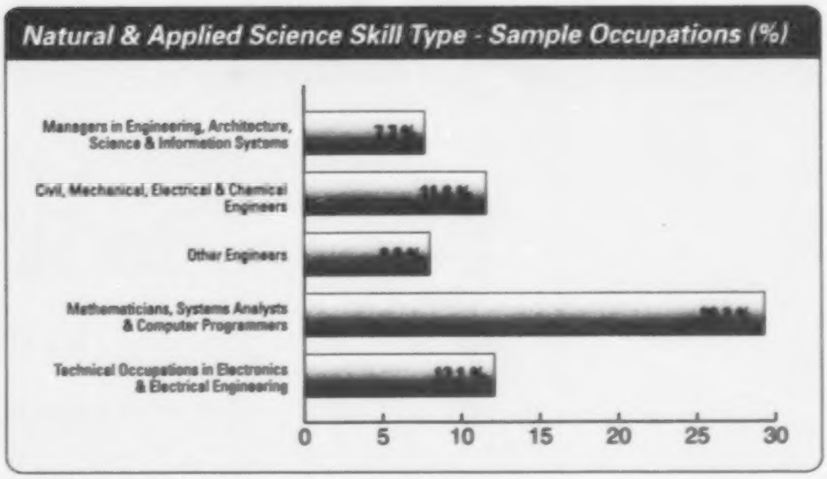
Currently labour market conditions in natural and applied sciences are rated as *good*. This rating follows from the fact that the unemployment rate in these occupations is about three-fifths that of the economy-wide rate (6%) and earnings are about 20% higher than average. Over the 1999 to 2004 projection period labour market conditions are expected to remain *good*, the result of above-average growth in the creation of new jobs, an above-average rate of retirement and below-average growth in the number of new job seekers, especially school leavers.

Graph 5.1.13



Source: Statistics Canada, Labour Force Survey (1998)

Graph 5.1.14



Source: Statistics Canada, Labour Force Survey (1998)

Health Occupations — Skill Type 3

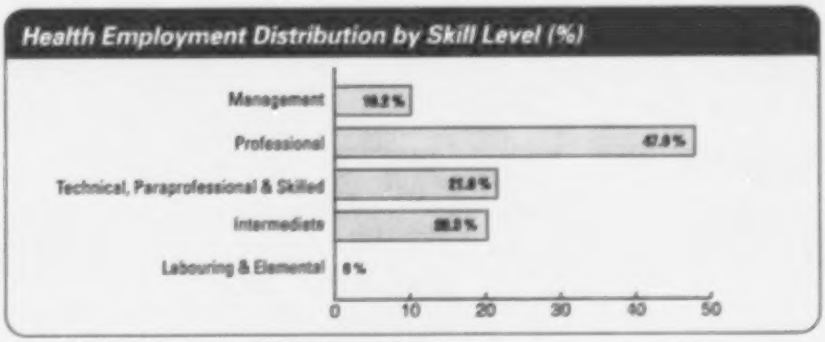
7% of new jobs created over the 1999-2004 period are expected to be in occupations in the health sector....

The health skill type accounted for 6.1% (811,333) of total 1998 non-student employment.

Graph 5.1.15 highlights the fact that a large share (48%) of these occupations generally require a university degree. Graph 5.1.16 indicates that the largest occupation in this grouping is nurses, accounting for approximately 29% of employment in health.

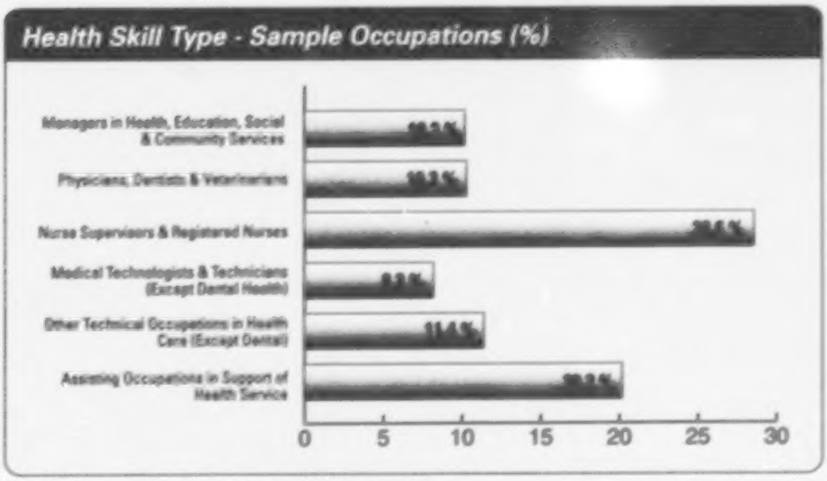
Currently labour market conditions in health are rated as *good*. This rating follows from the fact that the unemployment rate in these occupations is about one-third that of the economy-wide rate (6%) and earnings are 15% higher than average. Over the 1999 to 2004 projection period labour market conditions are expected to remain *good* due to above-average growth in new job creation and retirements (double the rate of increase over the 1994 to 1998 period), a slowing in the growth of school leavers, no change in immigration levels and a decline in the number of occupational re-entrants. New job creation is expected to increase since an aging population requires more attention, there is an increased health consciousness and the sector is recovering from the mid-1990's restructuring of the health care system.

Graph 5.1.15



Source: Statistics Canada, Labour Force Survey (1998)

Graph 5.1.16



Source: Statistics Canada, Labour Force Survey (1998)

Occupations in Social Science, Education, Government Services and Religion — Skill Type 4

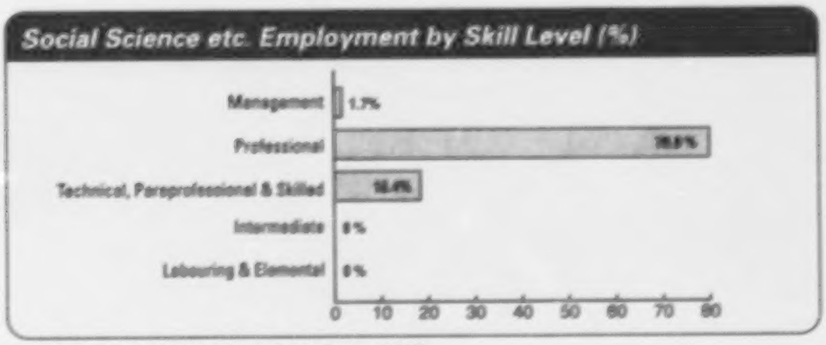
8% of new jobs created over the 1999-2004 period are expected to be in social science, education, government services and religion occupations....

The social science, education, government services and religion skill type accounted for 7.3% (971,383 people) of total 1998 non-student employment.

Graph 5.1.17 highlights the fact that most (80%) of these occupations generally require a university degree. Graph 5.1.18 indicates that the largest occupation in this grouping is elementary/secondary school teachers and counsellors, accounting for approximately 40% of employment in social science, education, government services and religion.

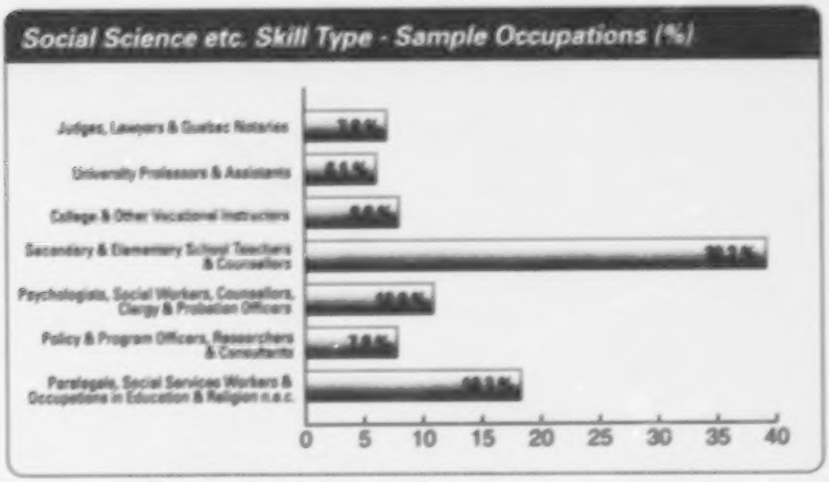
Currently labour market conditions in social science, education, government services and religion are rated as *fair*. This rating follows from the fact that the unemployment rate and earnings in these occupations are only slightly better than those of the economy-wide averages. Over the 1999 to 2004 projection period labour market conditions are expected to remain *fair*, the result of an average growth in the creation of new jobs and an above-average rate of retirement being balanced by the growth in the number of new job seekers, especially school leavers.

Graph 5.1.17



Source: Statistics Canada, Labour Force Survey (1998)

Graph 5.1.18



Source: Statistics Canada, Labour Force Survey (1998)

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7% of new jobs created over the 1999-2004 period are expected to be in occupations in the health sector....

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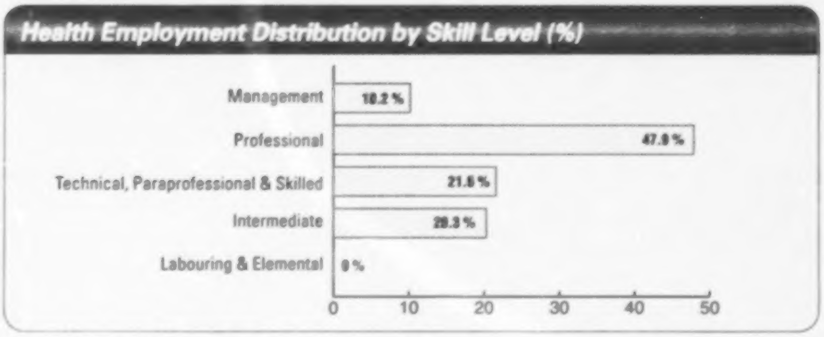
Graph 5.1.15 highlights the fact that a large share (48%) of these occupations generally require a university degree. Graph 5.1.16 indicates that the largest occupation in this grouping is nurses, accounting for approximately 29% of employment in health.

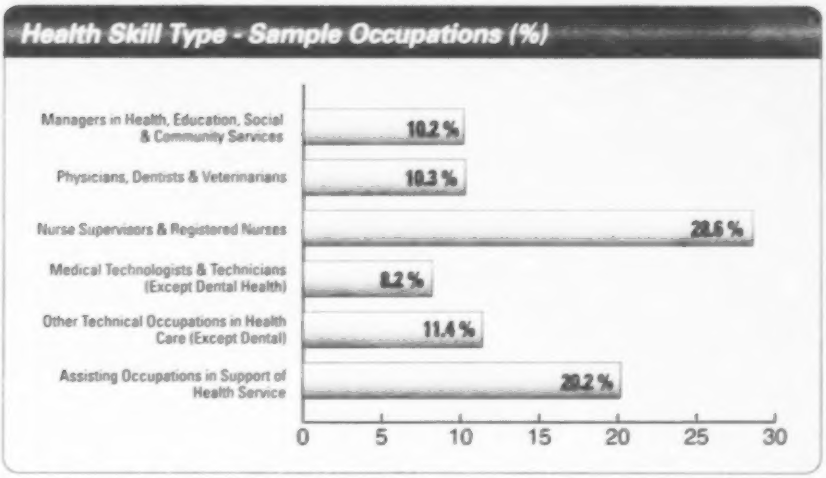
Currently labour market conditions in health are rated as *good*. This rating follows from the fact that the unemployment rate in these occupations is about one-third that of the economy-wide rate (6%) and earnings are 15% higher than average. Over the 1999 to 2004 projection period labour market conditions are expected to remain *good* due to above-average growth in new job creation and retirements (double the rate of increase over the 1994 to 1998 period), a slowing in the growth of school leavers, no change in immigration levels and a decline in the number of occupational re-entrants. New job creation is expected to increase since an aging population requires more attention, there is an increased health consciousness and the sector is recovering from the mid-1990's restructuring of the health care system.

Graph 5.1.15



Source: Statistics Canada, Labour Force Survey (1998)

Graph 5.1.16



Source: Statistics Canada, Labour Force Survey (1998)

Occupations in Social Science, Education, Government Services and Religion — Skill Type 4

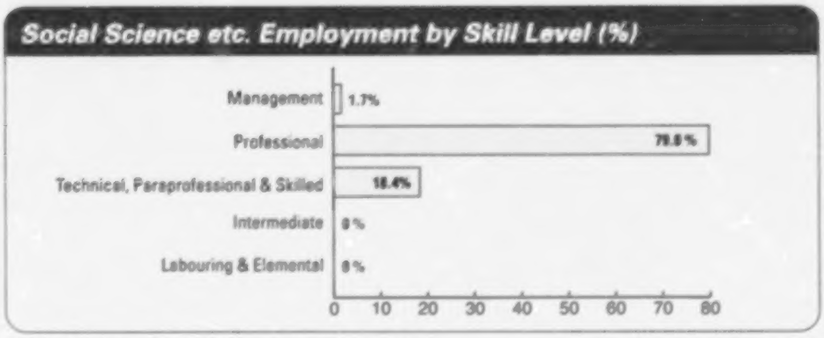
8% of new jobs created over the 1999-2004 period are expected to be in social science, education, government services and religion occupations....

The social science, education, government services and religion skill type accounted for 7.3% (971,363 people) of total 1998 non-student employment.

Graph 5.1.17 highlights the fact that most (80%) of these occupations generally require a university degree. Graph 5.1.18 indicates that the largest occupation in this grouping is elementary/secondary school teachers and counsellors, accounting for approximately 40% of employment in social science, education, government services and religion.

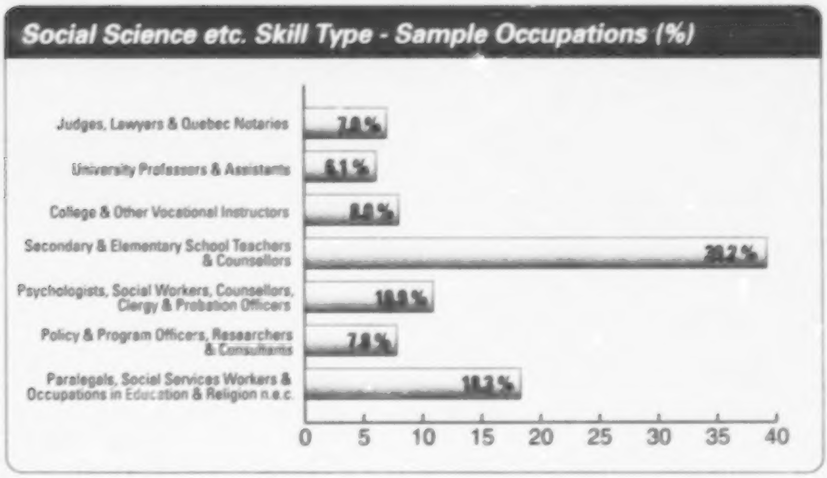
Currently labour market conditions in social science, education, government services and religion are rated as *fair*. This rating follows from the fact that the unemployment rate and earnings in these occupations are only slightly better than those of the economy-wide averages. Over the 1999 to 2004 projection period labour market conditions are expected to remain *fair*, the result of an average growth in the creation of new jobs and an above-average rate of retirement being balanced by the growth in the number of new job seekers, especially school leavers.

Graph 5.1.17


Social Science etc. Employment by Skill Level (%)

Source: Statistics Canada, Labour Force Survey (1998)

Graph 5.1.18


Social Science etc. Skill Type - Sample Occupations (%)

Source: Statistics Canada, Labour Force Survey (1998)

Occupations in Arts, Culture, Recreation and Sport — Skill Type 5

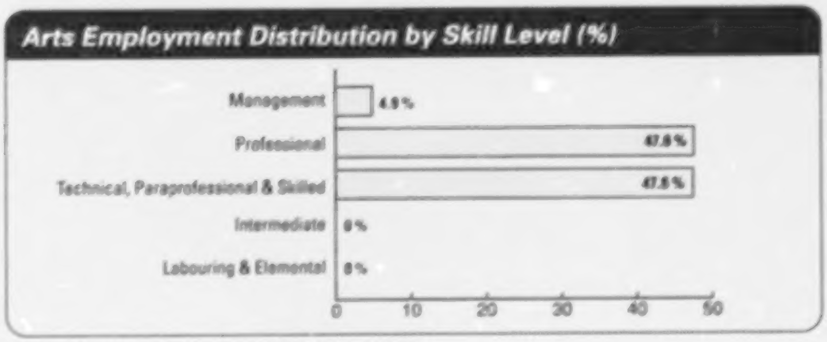
3% of new jobs created over the 1999-2004 period are expected to be in the arts, culture, recreation and sport occupations....

The art, culture, education, recreation and sport skill type accounted for 2.8% (370,206 people) of total 1998 non-student employment.

Graph 5.1.19 highlights the fact that these occupations are split evenly (48% each) between those requiring a university degree and those requiring a community college or trade/vocational diploma or certificate. Graph 5.1.20 indicates that the largest occupations in arts, culture, recreation, and sport are in writing, translating and public relations (21%) and creative and performing arts (21%).

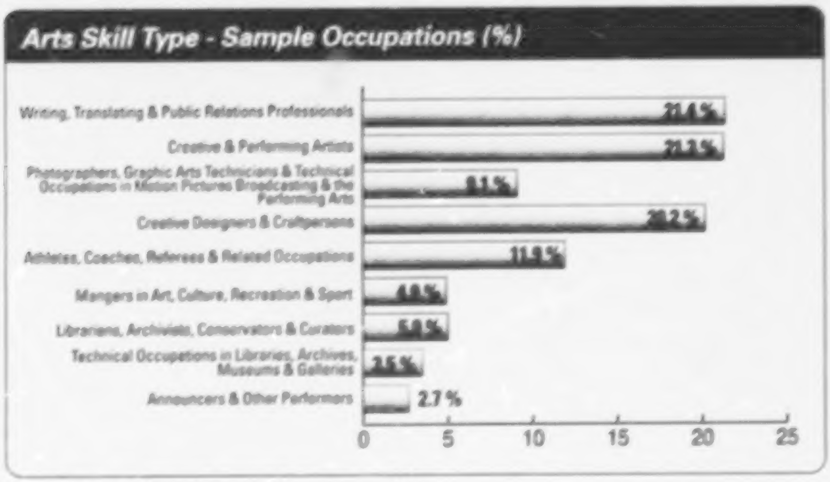
Currently labour market conditions in arts, culture, recreation and sport occupations are rated as *fair.* This rating follows from the fact that the unemployment rate and earnings in these occupations are about the same as those of the economy-wide averages. Over the 1999 to 2004 projection period labour market conditions are expected to remain *fair*, the result of average growth in the creation of new jobs and an above-average rate of retirement being balanced by the growth in the number of new job seekers, especially school leavers.

Graph 5.1.19



Source: Statistics Canada, Labour Force Survey (1998)

Graph 5.1.20



Source: Statistics Canada, Labour Force Survey (1998)

Sales and Service Occupations — Skill Type 6

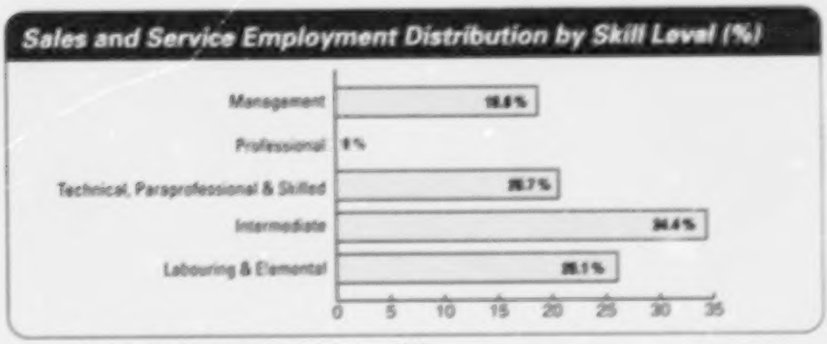
31% of new jobs created over the 1999-2004 period are expected to be in sales and service occupations....

The sales and service skill type accounted for 27.4% (3,669,085 people) of total 1998 non-student employment.

Graph 5.1.21 highlights the fact that the largest share of occupations is concentrated (34%) in occupations requiring high school graduation. Graph 5.1.22 indicates that the largest occupations in sales and service are retail salespersons and sales clerks and retail trade managers (11% each).

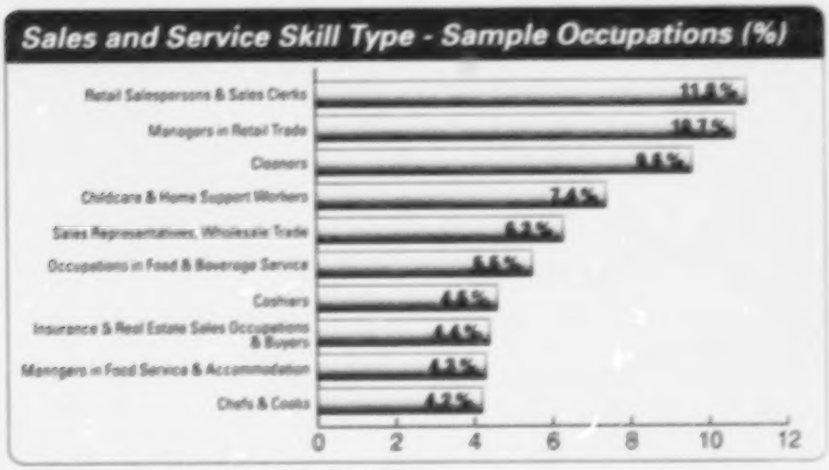
Currently labour market conditions in sales and service are rated as *fair*. This rating follows from the fact that the unemployment rate and earnings in these occupations are about the same as those of the economy-wide averages. Over the 1999 to 2004 projection period labour market conditions are expected to worsen and become *limited*, the result of average growth in the creation of new jobs, a below-average rate of retirement and above-average growth in the number of new job seekers, especially school leavers and immigrants.

Graph 5.1.21



Source: Statistics Canada, Labour Force Survey (1998)

Graph 5.1.22



Source: Statistics Canada, Labour Force Survey (1998)

Occupations in Arts, Culture, Recreation and Sport — Skill Type 5

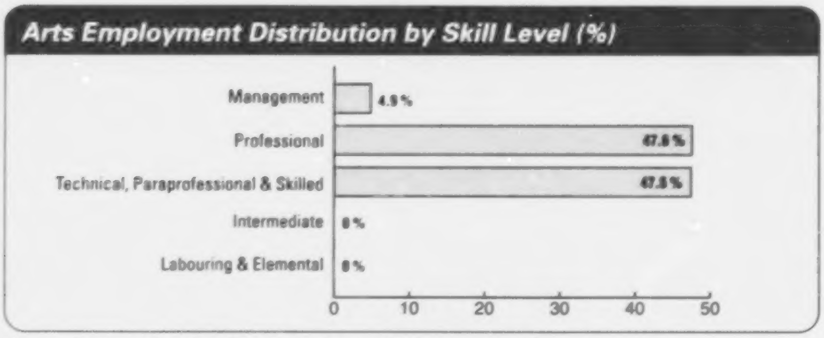
3% of new jobs created over the 1999-2004 period are expected to be in the arts, culture, recreation and sport occupations....

The art, culture, education, recreation and sport skill type accounted for 2.8% (370,206 people) of total 1998 non-student employment.

Graph 5.1.19 highlights the fact that these occupations are split evenly (48% each) between those requiring a university degree and those requiring a community college or trade/vocational diploma or certificate. Graph 5.1.20 indicates that the largest occupations in arts, culture, recreation, and sport are in writing, translating and public relations (21%) and creative and performing arts (21%).

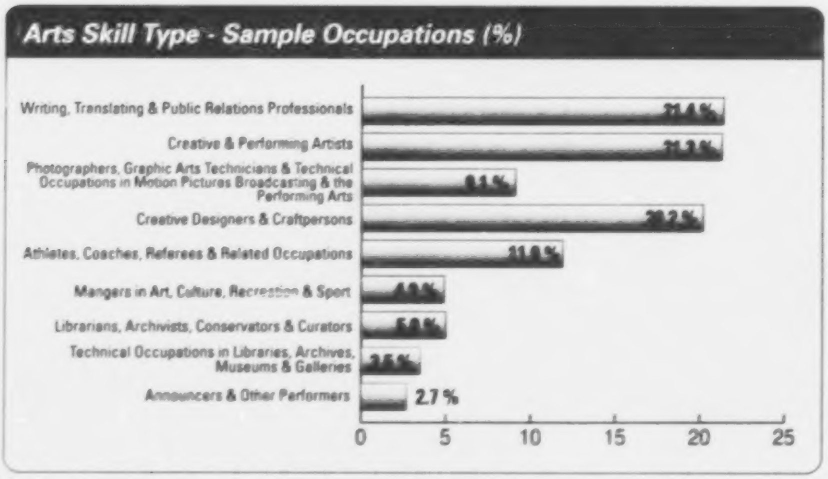
Currently labour market conditions in arts, culture, recreation and sport occupations are rated as *fair*. This rating follows from the fact that the unemployment rate and earnings in these occupations are about the same as those of the economy-wide averages. Over the 1999 to 2004 projection period labour market conditions are expected to remain *fair*, the result of average growth in the creation of new jobs and an above-average rate of retirement being balanced by the growth in the number of new job seekers, especially school leavers.

Graph 5.1.19



Source: Statistics Canada, Labour Force Survey (1998)

Graph 5.1.20



Source: Statistics Canada, Labour Force Survey (1998)

Sales and Service Occupations — Skill Type 6

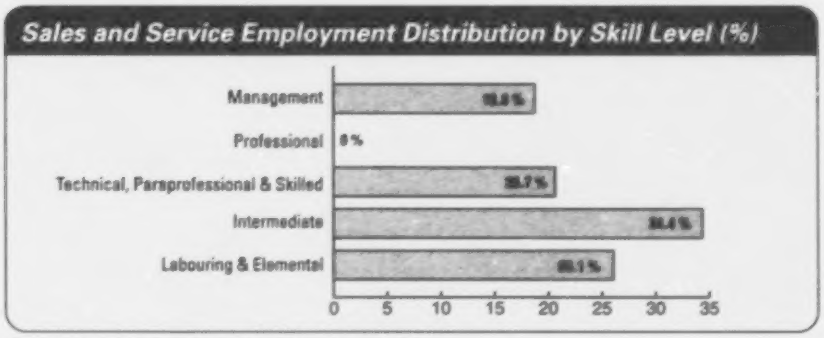
31% of new jobs created over the 1999-2004 period are expected to be in sales and service occupations....

The sales and service skill type accounted for 27.4% (3,669,085 people) of total 1998 non-student employment.

Graph 5.1.21 highlights the fact that the largest share of occupations is concentrated (34%) in occupations requiring high school graduation. Graph 5.1.22 indicates that the largest occupations in sales and service are retail salespersons and sales clerks and retail trade managers (11% each).

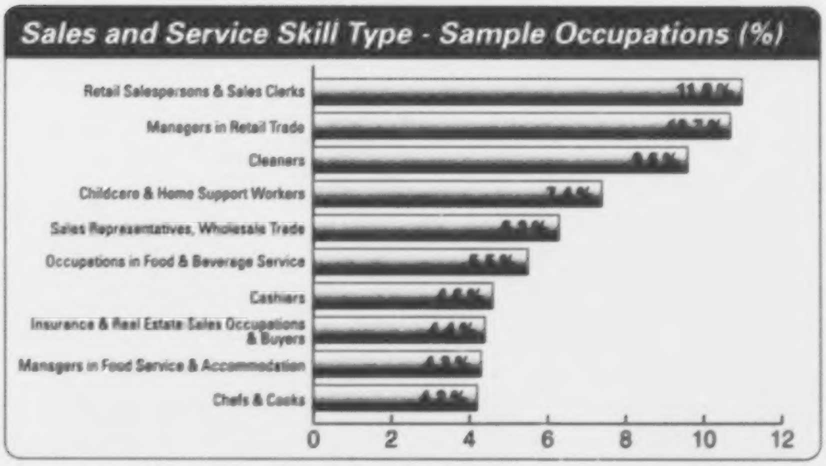
Currently labour market conditions in sales and service are rated as *fair.* This rating follows from the fact that the unemployment rate and earnings in these occupations are about the same as those of the economy-wide averages. Over the 1999 to 2004 projection period labour market conditions are expected to worsen and become *limited,* the result of average growth in the creation of new jobs, a below-average rate of retirement and above-average growth in the number of new job seekers, especially school leavers and immigrants.

Graph 5.1.21



Source: Statistics Canada, Labour Force Survey (1998)

Graph 5.1.22



Source: Statistics Canada, Labour Force Survey (1998)

Trades, Transport and Equipment Operators and Related Occupations

— Skill Type 7

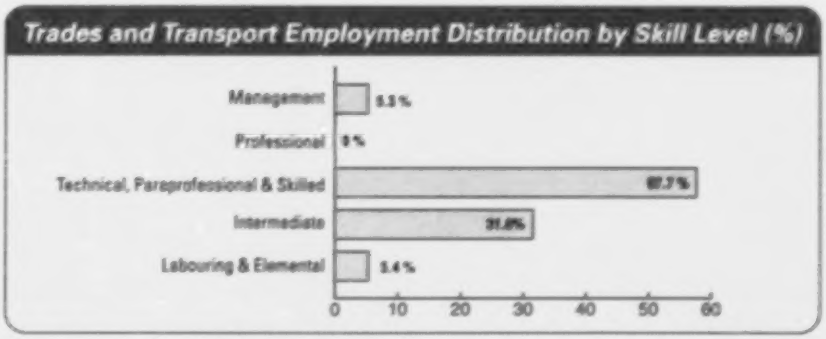
18% of new jobs created over the 1999-2004 period are expected to be in the trades and transport occupations....

The trades, transport and equipment operators skill type accounted for 16.2% (2,163,214 people) of total 1998 non-student employment.

Graph 5.1.23 highlights the fact that these occupations are concentrated (58%) in occupations requiring a community college or trade/vocational certificate. Graph 5.1.24 indicates that the largest occupation in this grouping is motor vehicle and transit drivers, accounting for 18% of employment in trades and transportation.

Currently labour market conditions in trades and transportation are rated as *fair*. This rating follows from the fact that the unemployment rate and earnings in these occupations are about the same as those of the economy-wide averages. Over the 1999 to 2004 projection period labour market conditions are expected to remain *fair*, although the number of new job openings is expected to slightly exceed the number of new job seekers.

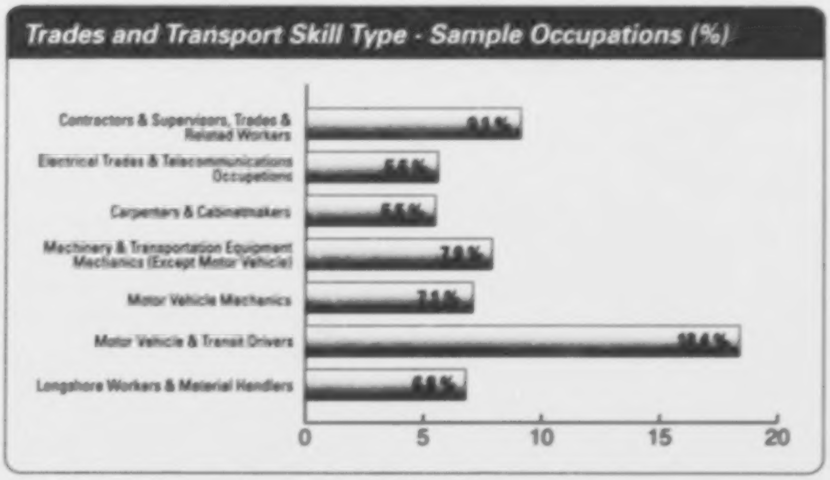
Graph 5.1.23



Trades and Transport Employment Distribution by Skill Level (%)

Source: Statistics Canada, Labour Force Survey (1998)

Graph 5.1.24



Trades and Transport Skill Type - Sample Occupations (%)

Source: Statistics Canada, Labour Force Survey (1998)

Occupations Unique to Primary Industry — Skill Type 8

2% of new jobs created over the 1999-2004 period are expected to be in primary industry occupations....

The primary industry skill type accounted for 4.2% (560,577 people) of total 1998 non-student employment.

Graph 5.1.25 highlights the fact that these occupations are concentrated (62%) in occupations requiring a community college or trade/vocational certificate. Graph 5.1.26 indicates that the largest occupation in this grouping is contractors and supervisors in agriculture, horticulture and aquaculture, accounting for 49% of employment in primary industry.

Currently labour market conditions in primary industries are rated as *fair*. This rating follows from the fact that the unemployment rate and earnings in these occupations are about the same as those of the economy-wide averages. Over the 1999 to 2004 projection period labour market conditions are expected to remain *fair*, although the number of new job seekers is expected to slightly exceed the number of new job openings.

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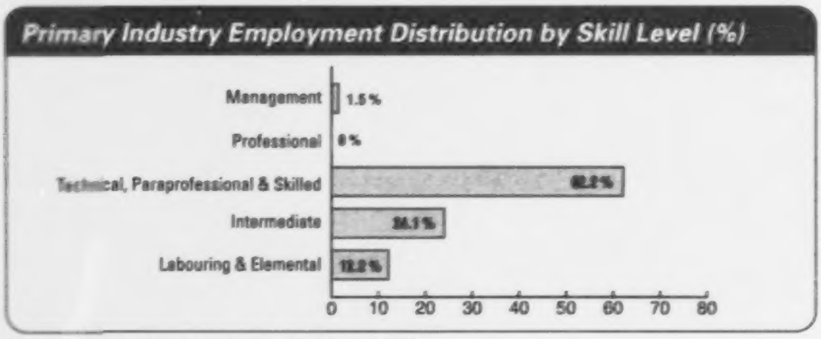
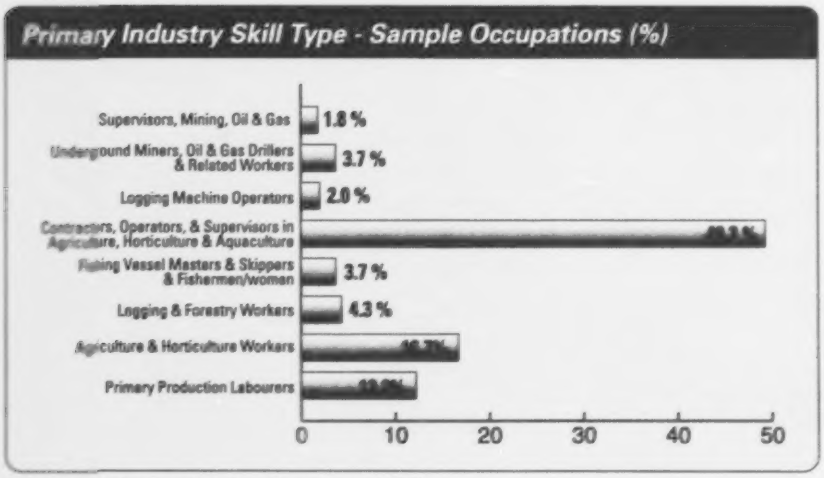


Source: Statistics Canada, Labour Force Survey (1998)

Graph 5.1.26



Source: Statistics Canada, Labour Force Survey (1998)

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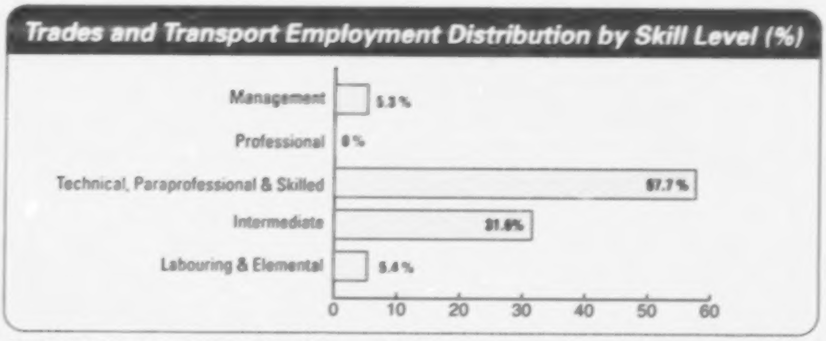
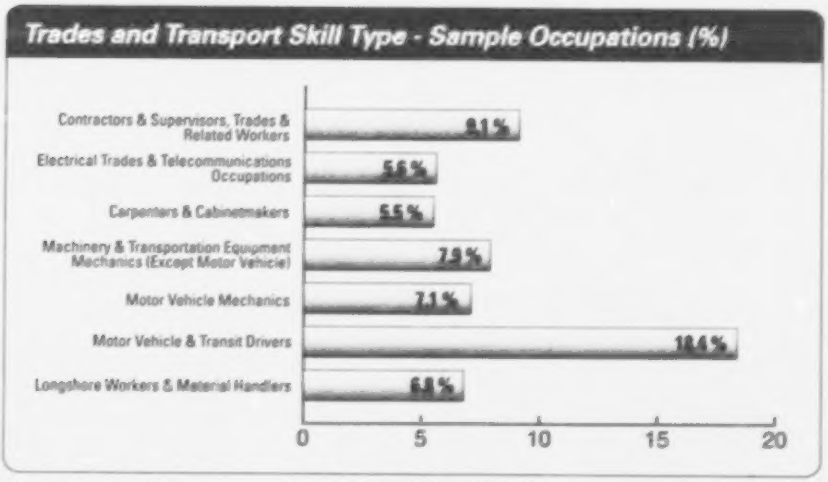


Trades and Transport Employment Distribution by Skill Level (%)

Source: Statistics Canada, Labour Force Survey (1998)

Graph 5.1.24



Trades and Transport Skill Type - Sample Occupations (%)

Source: Statistics Canada, Labour Force Survey (1998)

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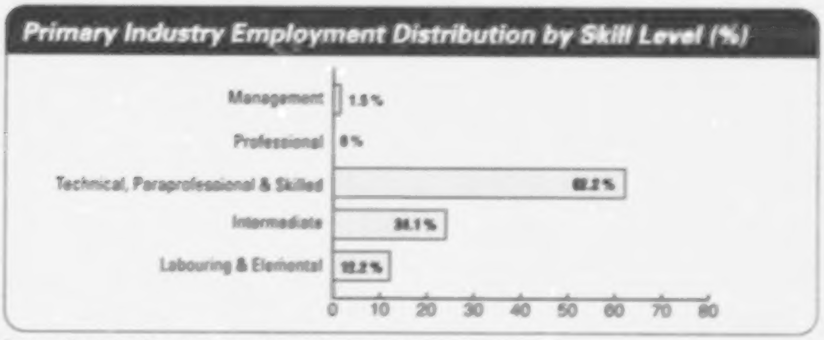
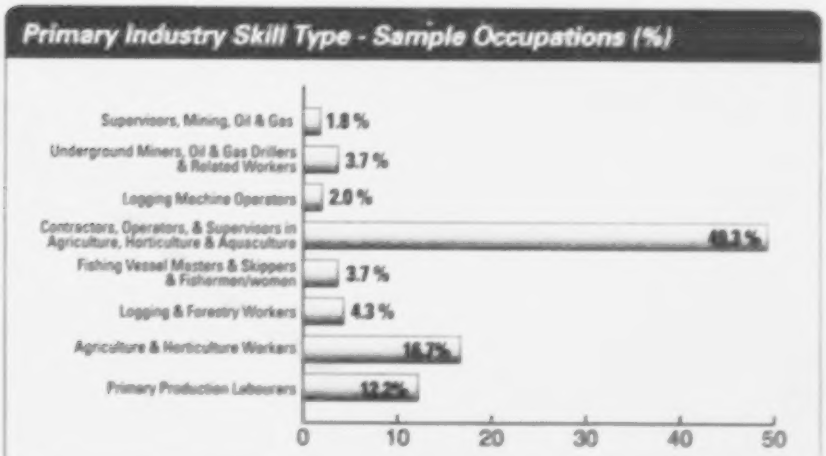


Primary Industry Employment Distribution by Skill Level (%)

Source: Statistics Canada, Labour Force Survey (1998)

Graph 5.1.26



Primary Industry Skill Type - Sample Occupations (%)

Source: Statistics Canada, Labour Force Survey (1998)

Occupations Unique to Processing, Manufacturing and Utilities

— Skill Type 9

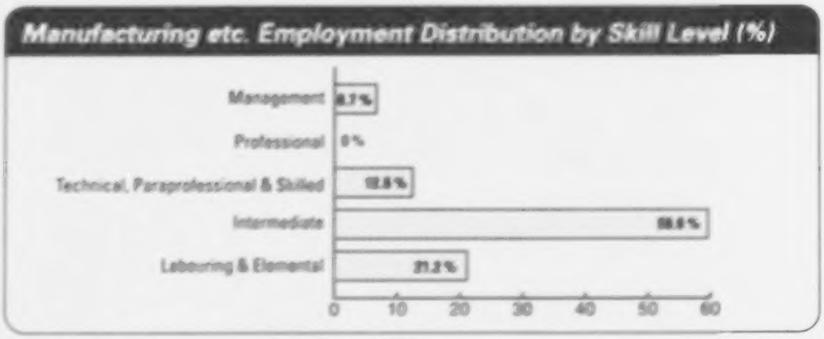
7% of new jobs created over the 1999-2004 period are expected to be in the processing, manufacturing and utilities occupations….

The processing, manufacturing and utilities skill type accounted for 8.7% (1,164,230 people) of total 1998 non-student employment.

Graph 5.1.27 highlights the fact that these occupations are concentrated (60%) in occupations requiring high school graduation. Graph 5.1.28 indicates that the largest occupation in this grouping is labourers in processing, manufacturing and utilities, accounting for 21% of employment in processing, manufacturing and utilities.

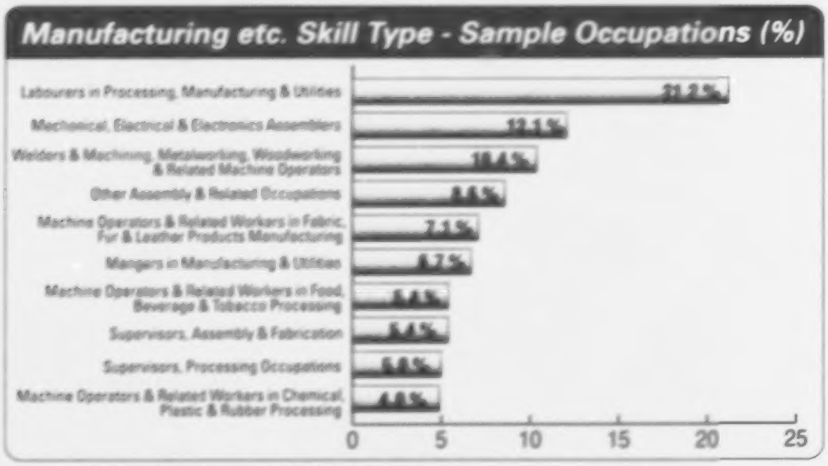
Currently labour market conditions in processing, manufacturing and utilities are rated as *fair*. This rating follows from the fact that the unemployment rate and earnings in these occupations are about the same as those of the economy-wide averages. Over the 1999 to 2004 projection period labour market conditions are expected to remain *fair*, although the number of new job seekers is expected to slightly exceed the number of new job openings.

Graph 5.1.27



Source: Statistics Canada, Labour Force Survey (1998)

Graph 5.1.28



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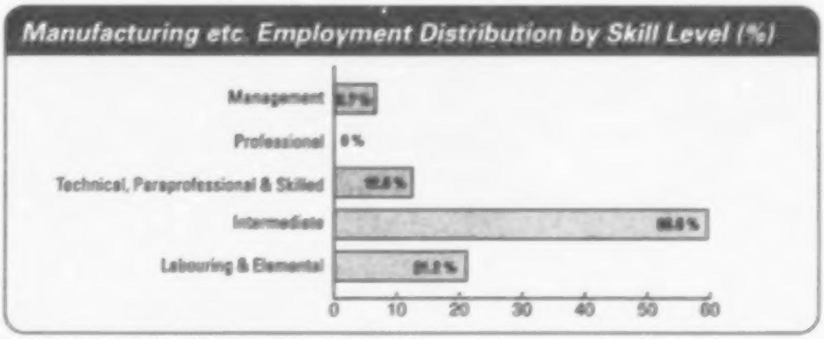
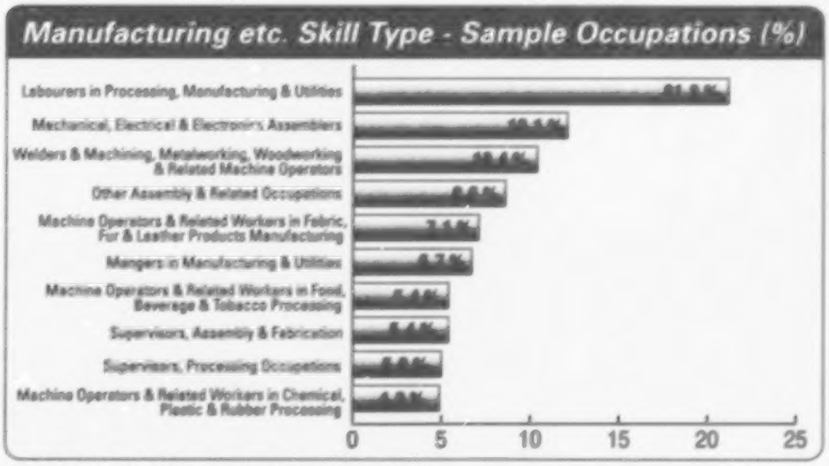


Source: Statistics Canada, Labour Force Survey (1998)

Graph 5.1.28



Source: Statistics Canada, Labour Force Survey (1998)

5.2 Overview of Outlooks by Field of Study

One of the key determinants of labour market conditions for new graduates is the labour market conditions of the occupations in which they are expected to look for work. For example, the labour market conditions for nursing graduates are primarily determined by the labour market conditions for the nursing occupation. However, labour market conditions are not the only determinants of whether or not an individual will have success in finding employment. An individual's talents, skills, experience and interests also play a major role in a successful job search.

Table 5.2.1 presents data taken from various HRDC/Statistics Canada National Graduate Surveys. Data and research indicate that, generally, the probability of finding employment improves with progressively higher levels of education. For example, one can see in the table that the unemployment rate for trade/vocational graduates, two years after graduation, was roughly double the unemployment rate of undergraduate university graduates. Part of this difference is due to the labour market conditions in occupations in which graduates are expected to look for or find work. However, other factors related to firms' and workers' behaviour in the labour market, such as credentialism or job search techniques, also play a role in determining labour market outcomes.

Table 5.2.2 presents a summary of the average ratings for 1998 and 2004 of labour market conditions for post-secondary graduates, aggregated by four levels of study and nine broad fields of study.

Table 5.2.1 — ***Labour Market Outcomes of Recent Graduates***

Level of Study	Year of Graduation	Unemployment Rates		Full-Time, Full-Year Earnings	
		2 Years After Graduation	5 Years After Graduation	2 Years After Graduation	5 Years After Graduation
Trade/ Vocational	1982	25%	17%	$16,000	$21,900
	1986	17%	19%	$19,900	$27,700
	1990	20%	14%	$24,200	$29,400
	1995	15%	N/A	$25,900	N/A
Community College	1982	10%	4%	$18,700	$25,200
	1986	13%	7%	$20,700	$30,200
	1990	10%	6%	$26,700	$31,900
	1995	10%	N/A	$27,500	N/A
Undergraduate University	1982	10%	5%	$23,800	$32,800
	1986	10%	7%	$26,800	$39,200
	1990	10%	6%	$32,200	$40,200
	1995	9%	N/A	$33,600	N/A
Master's	1982	8%	2%	$33,400	$42,100
	1986	7%	4%	$36,800	$50,100
	1990	11%	8%	$43,400	$53,300
	1995	8%	N/A	$47,200	N/A
Doctorate	1982	7%	1%	$38,000	$43,200
	1986	5%	11%	$38,000	$50,800
	1990	6%	4%	$46,600	$55,000
	1995	9%	N/A	$48,100	N/A

Source: Statistics Canada's National Graduate Surveys of 1984, 1988, 1992 and 1997

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Community College	1982	10%	4%	$18,700	$25,200
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	1990	10%	6%	$26,700	$31,900
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	1990	10%	6%	$32,200	$40,200
	1995	9%	N/A	$33,600	N/A
Master's	1982	8%	2%	$33,400	$42,100
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Doctorate	1982	7%	1%	$38,000	$43,200
	1986	5%	11%	$38,000	$50,800
	1990	6%	4%	$46,600	$55,000
	1995	9%	N/A	$48,100	N/A

Source: Statistics Canada's National Graduate Surveys of 1984, 1988, 1992 and 1997.

Table 5.2.2 — ***Labour Market Conditions for Recent Post-Secondary Graduates – Current and 2004***

Education Levels

Broad Fields of Study	Master's	Undergraduate	Community College	Trade/ Vocational	All
	Current - **2004**	Current - **2004**	Current - **2004**	Current - **2004**	Current - **2004**
Arts	--	fair-**fair**	fair-**fair**	fair-**fair**	fair-**fair**
Business, Commerce, Management & Administration	good-**good**	good-**good**	fair-**fair**	limited-**limited**	good-**good**
Education	fair-**fair**	fair-**fair**	fair-**limited**	--	fair-**fair**
Engineering & Engineering Technologies	good-**good**	good-**good**	fair-**fair**	fair-**fair**	fair-**fair**
Humanities	fair-**fair**	fair-**fair**	fair-**fair**	--	fair-**fair**
Medicine and Health	good-**good**	good-**good**	good-**good**	fair-**fair**	good-**good**
Natural Sciences and Primary Technologies	fair-**fair**	fair-**fair**	limited-**limited**	limited-**limited**	fair-**fair**
Physical Sciences	good-**good**	good-**good**	good-**good**	good-**good**	good-**good**
Social Sciences and Services	fair-**fair**	fair-**fair**	fair-**fair**	limited-**limited**	fair-**fair**
All	good-**good**	fair-**fair**	fair-**fair**	fair-**fair**	fair-**fair**

Source: "Canadian Occupational Projection System (COPS), 1999 Reference Scenario", T-99-1E, Applied Research Branch, HRDC.

See definitions of "Good", "Fair" and "Limited" in the "Glossary of Terms".

M121

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5.2.1 — Overview by Level of Study

This section provides information on labour market conditions for recent post-secondary graduates from the perspective of the aggregate level of study. There are four education levels: trade/vocational; community college; undergraduate university; and master's university.

Each of the four sub-sections below provides an overview of the current and future outlooks for finding work for recent graduates at that education level, and two summary graphs: the first indicates the distribution of recent post-secondary graduates in that education level across the nine broad fields of study, and the second provides an indication of the largest major fields of study and their share of recent graduates within the broad field of study.

By their nature, aggregate outlooks represent an average of the factors used to determine the detailed outlooks for the underlying fields of study. For further detail or to get an idea of which major fields of study within an education level have outlooks that differ from the overall ratings, refer to the individual profiles in *Part 2: Outlooks by Field of Study*, or to the *Job Futures 2000* web site: www.hrdc-drhc.gc.ca/JobFutures. The 'Overview by Level of Study' section on the website also contains tables providing additional explanations of why an outlook may differ from the overall rating.

Trade/Vocational

"Fair" labour market conditions are expected over the 1999-2004 period for trade/vocational graduates....

13% of recent post-secondary school leavers had a trade/vocational diploma or certificate.

Graph 5.2.1 highlights the fact that trade/vocational graduates were concentrated (52%) in the engineering technology broad field of study. Graph 5.2.2 indicates that the largest major fields of study at the trade/vocational level were construction technologies and electrical/electronic engineering technologies (8% each).

Currently labour market conditions for trade/vocational graduates are rated as *fair.* This rating follows from the fact that the unemployment rate and earnings for these recent graduates are about the same as the economy-wide averages. Over the 1999 to 2004 projection period labour market conditions are expected to remain *fair* although the number of new job openings available to these graduates is expected to fall slightly short of the number of new job seekers.

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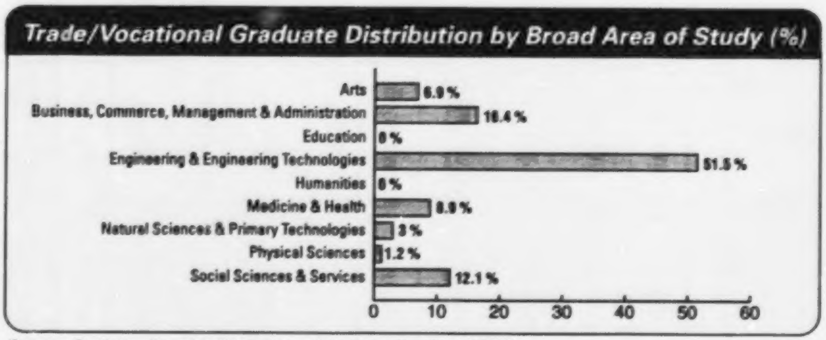
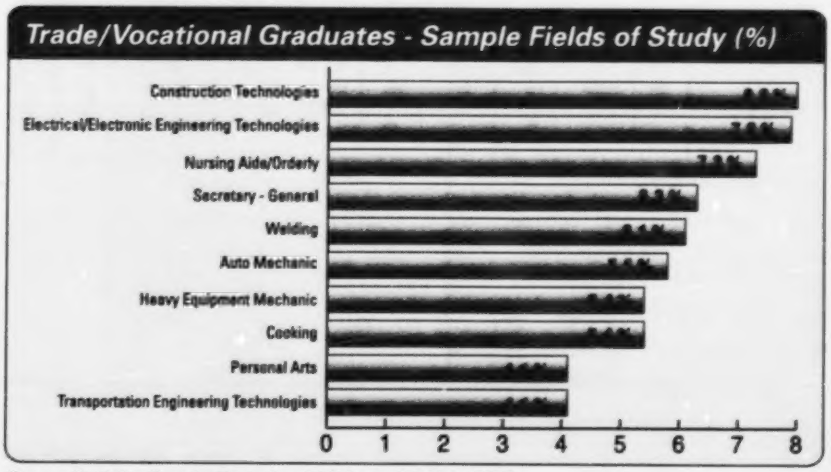


Source: Statistics Canada, Educational Administrative Data (1997).

Graph 5.2.2



Source: Statistics Canada, Educational Administrative Data (1997).

Community College/Cégep

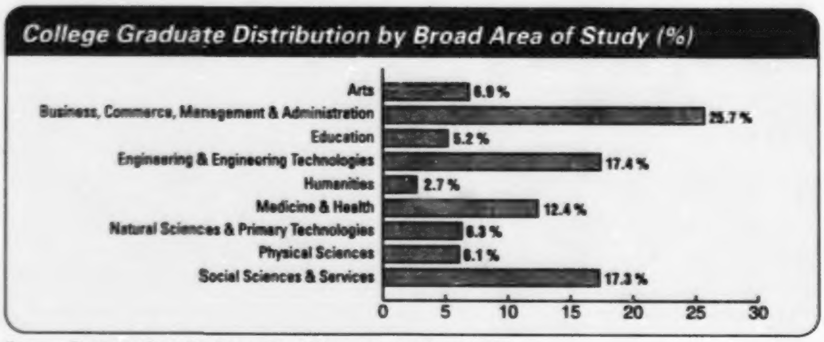
"Fair" labour market conditions are expected over the 1999-2004 period for community college/cégep graduates....

30% of recent post-secondary school leavers had a community college diploma or certificate.

Graph 5.2.3 highlights the fact that the largest share of community college graduates was concentrated (26%) in the business broad field of study. Graph 5.2.4 indicates that the largest major field of study at the community college level was business and administration (9%).

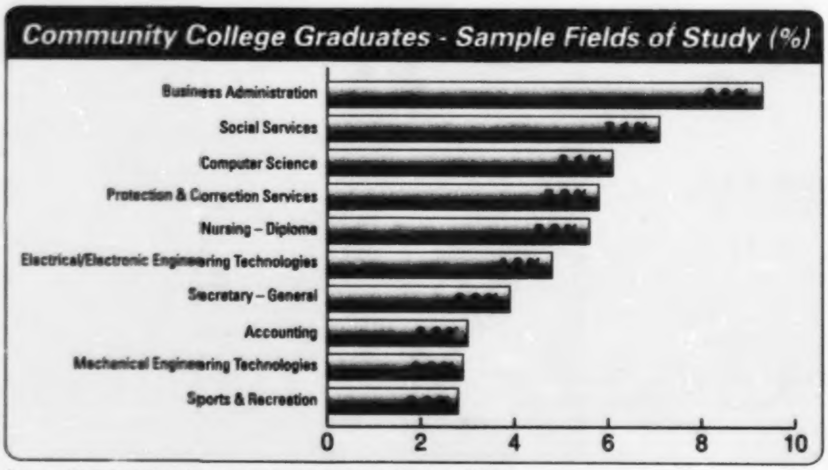
Currently labour market conditions for community college graduates are rated as *fair*. This rating follows from the fact that the unemployment rate and earnings for these recent graduates are about the same as the economy-wide averages. Over the 1999 to 2004 projection period labour market conditions are expected to remain *fair* as the number of new job openings available to these graduates is expected to match the number of new job seekers.

Graph 5.2.3



Source: Statistics Canada, Educational Administrative Data (1997).

Graph 5.2.4



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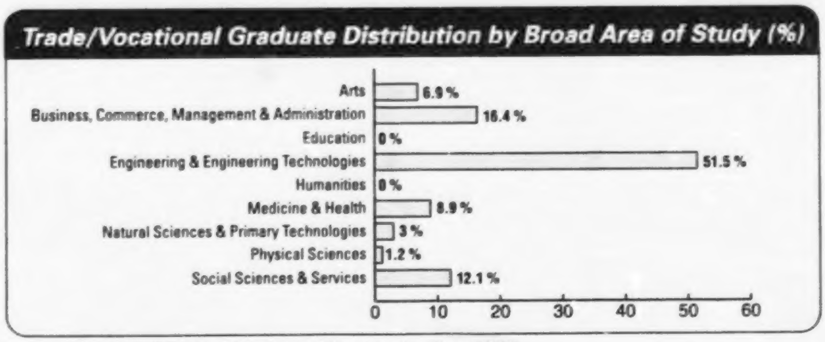
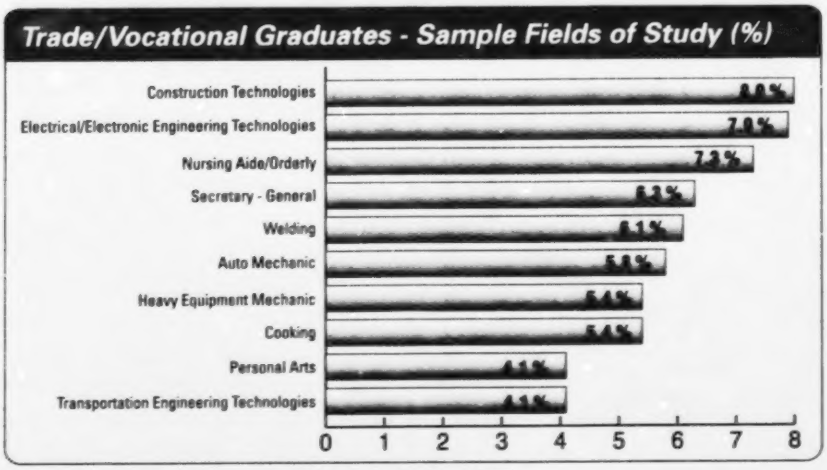


Trade/Vocational Graduate Distribution by Broad Area of Study (%)

Source: Statistics Canada, Educational Administrative Data (1997).

Graph 5.2.2



Trade/Vocational Graduates - Sample Fields of Study (%)

Source: Statistics Canada, Educational Administrative Data (1997).

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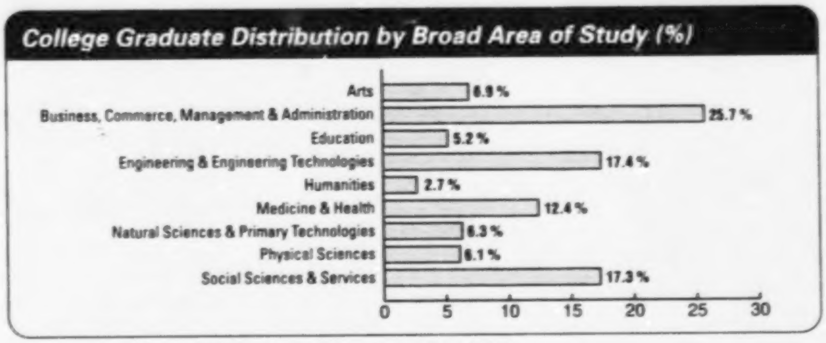
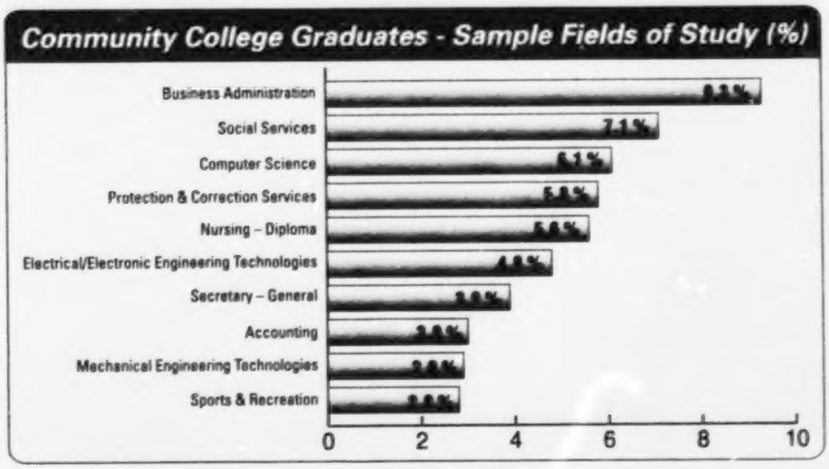
Graph 5.2.3



College Graduate Distribution by Broad Area of Study (%)

Source: Statistics Canada, Educational Administrative Data (1997).

Graph 5.2.4



Community College Graduates - Sample Fields of Study (%)

Source: Statistics Canada, Educational Administrative Data (1997).

University, Undergraduate

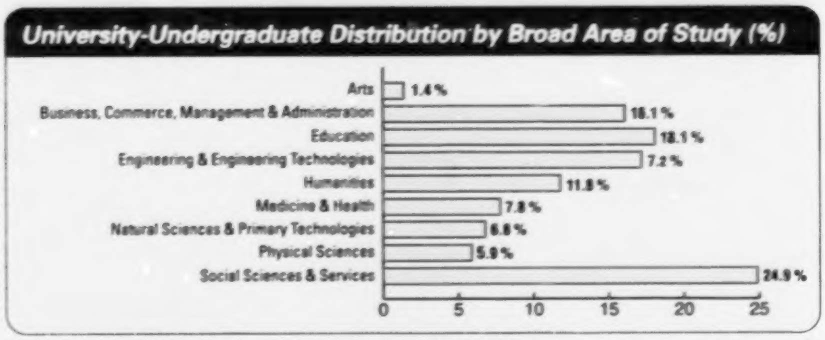
"Fair" labour market conditions are expected over the 1999-2004 period for undergraduate university graduates....

50% of recent post-secondary school leavers had an undergraduate university degree or diploma.

Graph 5.2.5 highlights the fact that the largest share of university undergraduates was concentrated (25%) in the social sciences and services broad field of study. Graph 5.2.6 indicates that the largest major field of study at the university undergraduate level was business and administration (15%).

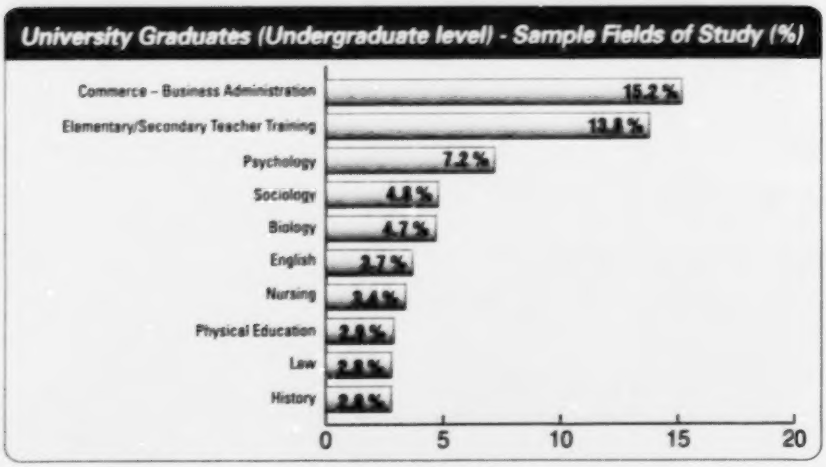
Currently labour market conditions for university undergraduates are rated as *fair*. This rating follows from the fact that the unemployment rate and earnings for these recent graduates are about the same as the economy-wide averages. Over the 1999 to 2004 projection period labour market conditions are expected to remain *fair* although the number of new job openings available to these graduates is expected to slightly exceed the number of new job seekers.

Graph 5.2.5



Source: Statistics Canada, Educational Administrative Data (1997)

Graph 5.2.6



Source: Statistics Canada, Educational Administrative Data (1997)

University, Master's

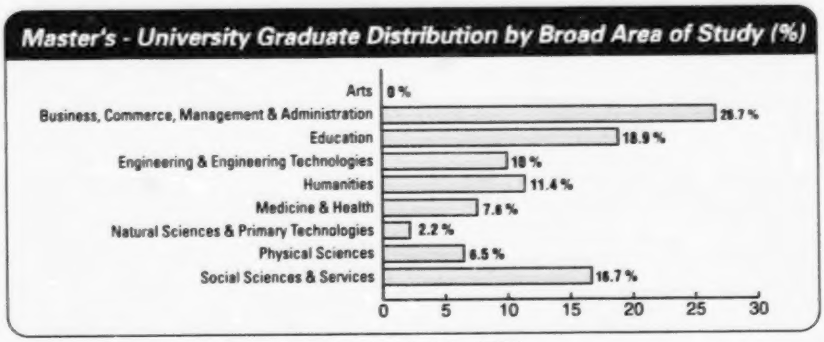
"Good" labour market conditions are expected over the 1999-2004 period for master's graduates...

8% of recent post-secondary school leavers had a master's degree.

Graph 5.2.7 highlights the fact that the largest share of master's graduates was concentrated (27%) in the business broad field of study. Graph 5.2.8 indicates that the largest major field of study at the master's level was business and administration (23%).

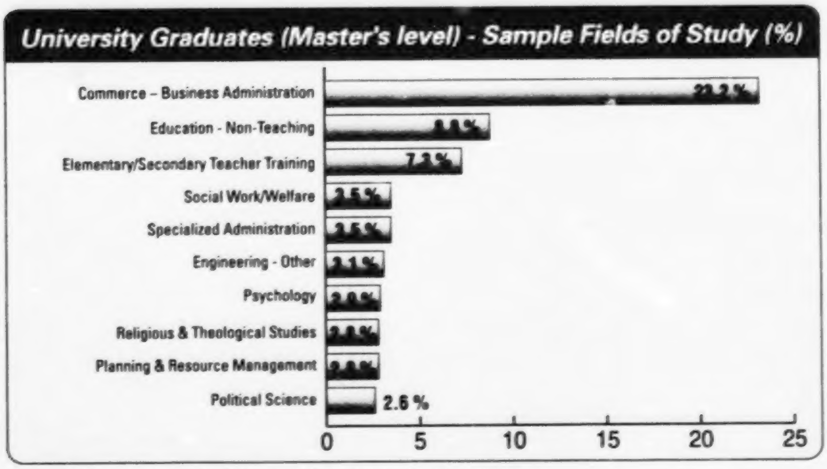
Currently labour market conditions for master's graduates are rated as *good*. This rating follows from the fact that the unemployment rate for recent master's graduates was 20% less than the average for all recent post-secondary graduates and earnings were 50% more than the average. Over the 1999 to 2004 projection period labour market conditions are expected to remain *good* although the number of new job openings available to these graduates is expected to exceed the number of new job seekers.

Graph 5.2.7



Source: Statistics Canada, Educational Administrative Data (1997).

Graph 5.2.8



Source: Statistics Canada, Educational Administrative Data (1997).

University, Undergraduate

"Fair" labour market conditions are expected over the 1999-2004 period for undergraduate university graduates....

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Graph 5.2.5 highlights the fact that the largest share of university undergraduates was concentrated (25%) in the social sciences and services broad field of study. Graph 5.2.6 indicates that the largest major field of study at the university undergraduate level was business and administration (15%).

Currently labour market conditions for university undergraduates are rated as *fair.* This rating follows from the fact that the unemployment rate and earnings for these recent graduates are about the same as the economy-wide averages. Over the 1999 to 2004 projection period labour market conditions are expected to remain *fair* although the number of new job openings available to these graduates is expected to slightly exceed the number of new job seekers.

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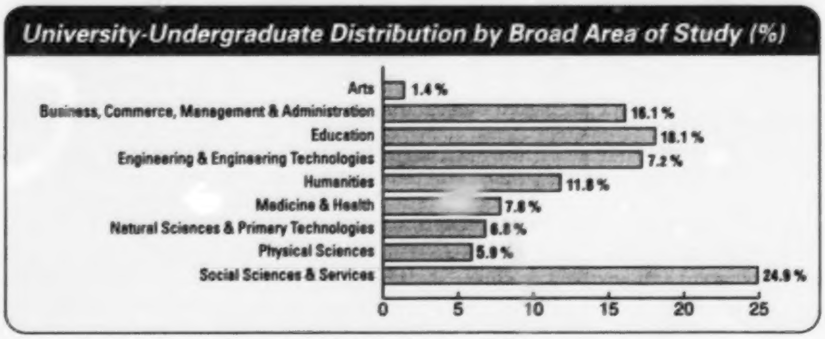
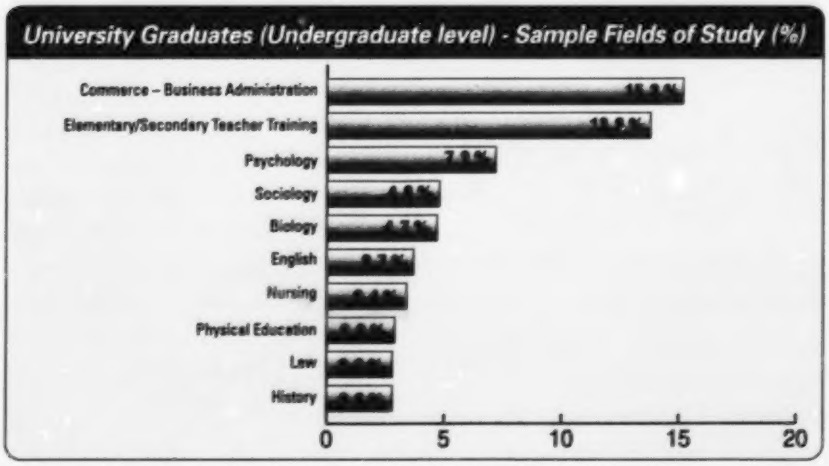


University-Undergraduate Distribution by Broad Area of Study (%)

Source: Statistics Canada, Educational Administrative Data (1997).

Graph 5.2.6



University Graduates (Undergraduate level) - Sample Fields of Study (%)

Source: Statistics Canada, Educational Administrative Data (1997).

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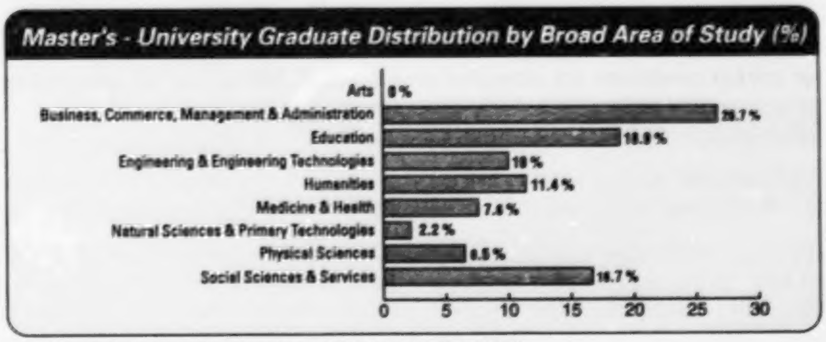
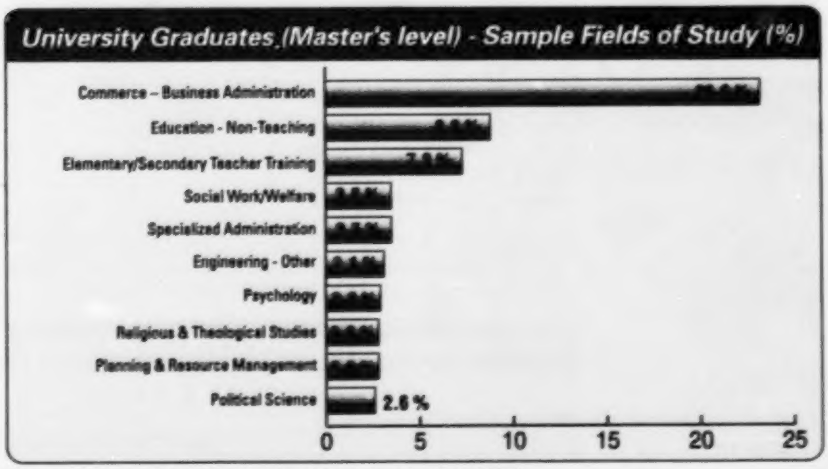

Master's - University Graduate Distribution by Broad Area of Study (%)

Source: Statistics Canada, Educational Administrative Data (1997).

Graph 5.2.8


University Graduates (Master's level) - Sample Fields of Study (%)

Source: Statistics Canada, Educational Administrative Data (1997).

5.2.2 — Overview by Broad Field of Study

This section provides information on labour market conditions for recent post-secondary graduates from the perspective of the aggregate broad fields of study. There are nine broad fields of study: arts; business, commerce, management and administration; education; engineering and engineering technologies; humanities; natural sciences and primary technologies; medicine and health; physical sciences; and social sciences and services.

Each of the nine sub-sections below provides an overview of the current and future outlooks for finding work for recent graduates from that broad field of study, and two summary graphs: the first indicates the distribution of recent post-secondary graduates in that broad field of study across the four education levels, and the second provides an indication of the largest major fields of study by education level and their share of recent graduates within the broad field of study.

By their nature, aggregate outlooks represent an average of the factors used to determine the detailed outlooks for the underlying fields of study. For further field of study detail or to get an idea of which major fields of study within an education level have outlooks that differ from the overall ratings, refer to the individual profiles in *Part 2: Outlooks by Field of Study*, or to the *Job Futures 2000* web site: www.hrdc-drhc.gc.ca/JobFutures. The 'Overview by Broad Field of Study' section on the website also contains tables providing additional explanations of why an outlook may differ from the overall rating.

Arts

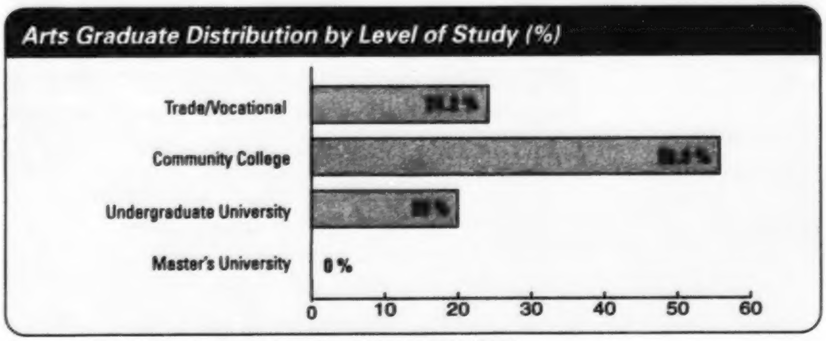
"Fair" labour market conditions are expected over the 1999-2004 period for arts graduates....

4% of recent post-secondary school leavers had a qualification in arts.

Graph 5.2.9 highlights the fact that over half (56%) of arts graduates received a community college diploma or certificate. Graph 5.2.10 indicates that the largest major field of study in arts was community college graphic and audio-visual arts (18%).

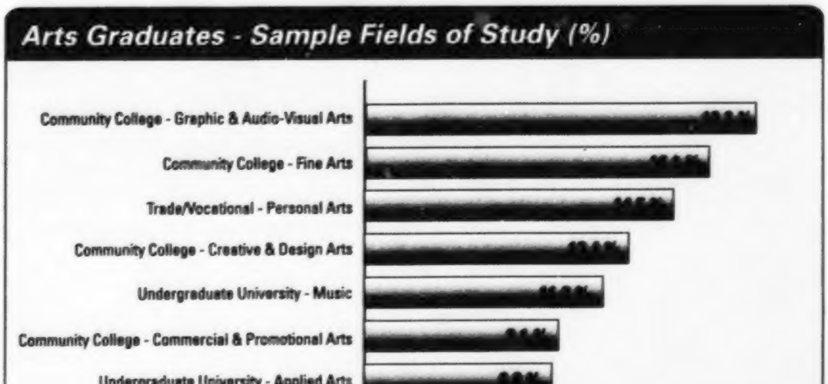
Currently labour market conditions for arts graduates are rated as *fair*. This rating follows from the fact that the unemployment rate and earnings for these recent graduates are about the same as the rates for all recent post-secondary graduates. Over the 1999 to 2004 projection period labour market conditions are expected to remain *fair* as the number of new job openings available to these graduates is expected to almost equal the number of new job seekers.

Graph 5.2.9



Source: Statistics Canada, Educational Administrative Data (1997).

Graph 5.2.10



Source: Statistics Canada, Educational Administrative Data (1997).

Business, Commerce, Management and Administration

"Good" labour market conditions over the 1999-2004 period are expected for business graduates....

20% of recent post-secondary school leavers had a qualification in business.

Graph 5.2.11 highlights the fact that a large share (40%) of business graduates received an undergraduate university degree. Graph 5.2.12 indicates that the largest major field of study in business was undergraduate university business and commerce (38%).

Currently labour market conditions for business graduates are rated as *good.* This rating follows from the fact that the unemployment rate and earnings for these recent graduates are better than the average rates for all recent post-secondary graduates. Current labour market conditions for business graduates are rated as *limited* at the trade/vocational level of study, *fair* at the community college level and *good* at the university level. Over the 1999 to 2004 projection period labour market conditions are expected to remain *good* as the number of new job openings available to these graduates is expected to exceed the number of new job seekers.

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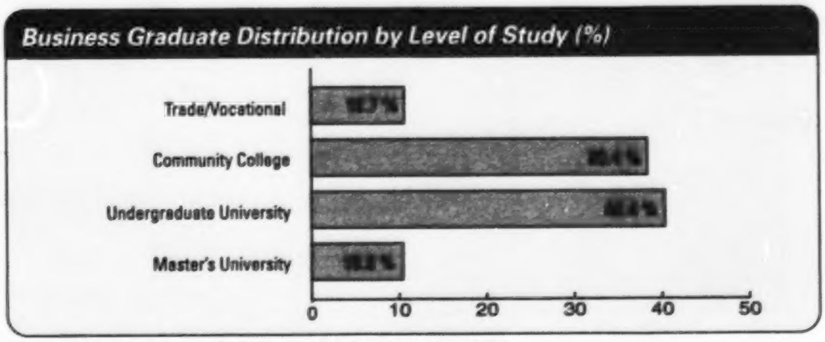
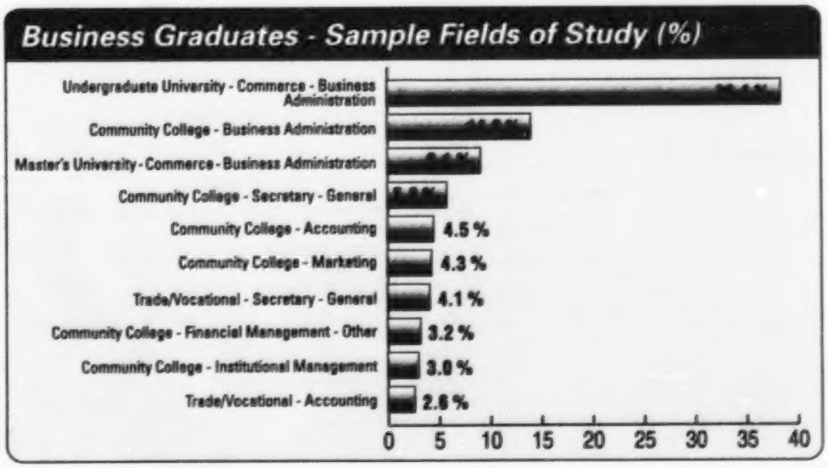


Source: Statistics Canada, Educational Administrative Data (1997).

Graph 5.2.12



Source: Statistics Canada, Educational Administrative Data (1997).

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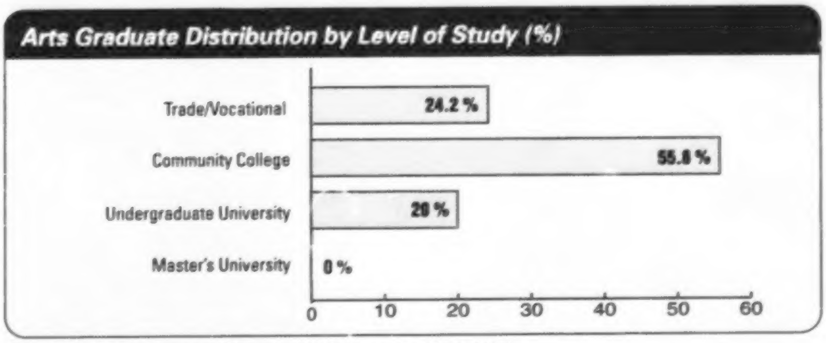
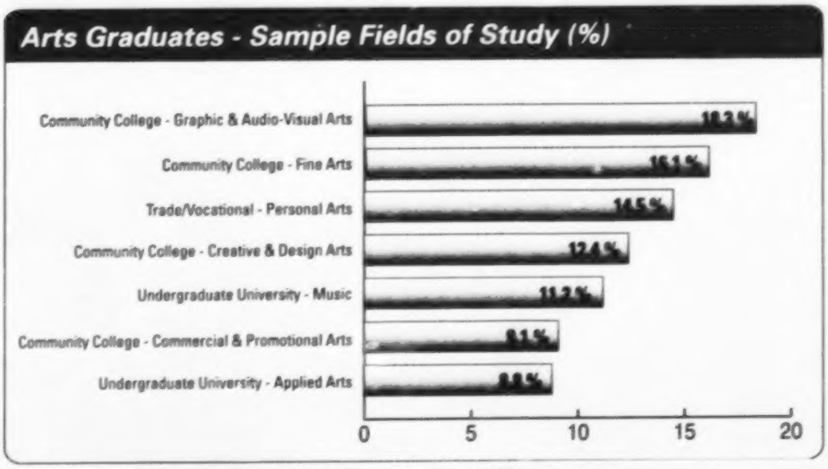


Source: Statistics Canada, Educational Administrative Data (1997).

Graph 5.2.10



Source: Statistics Canada, Educational Administrative Data (1997).

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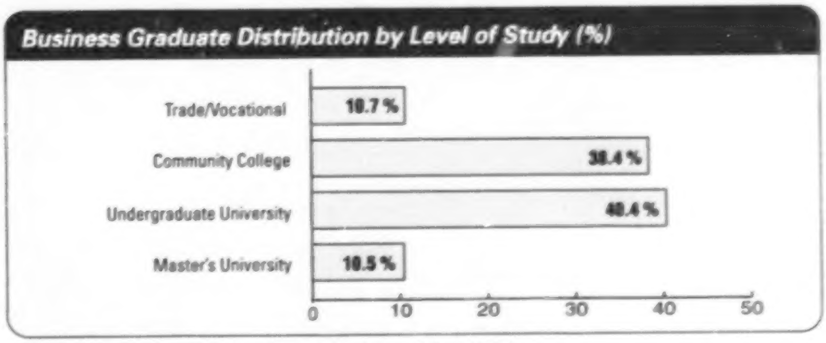
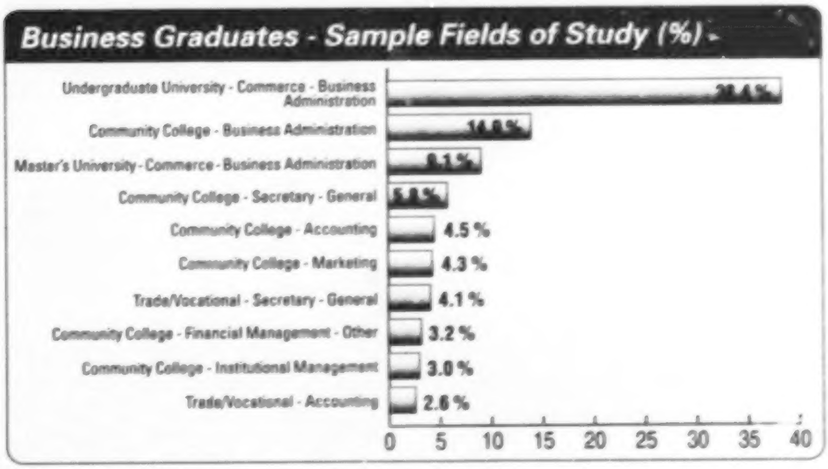


Source: Statistics Canada, Educational Administrative Data (1997).

Graph 5.2.12



Source: Statistics Canada, Educational Administrative Data (1997)

Education

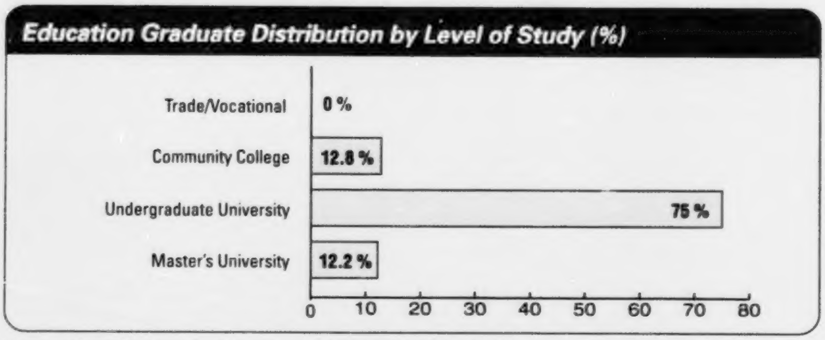
"Fair" labour market conditions over the 1999-2004 period are expected for education graduates....

12% of recent post-secondary school leavers had a qualification in education.

Graph 5.2.13 highlights the fact that most (75%) education graduates received an undergraduate university degree. Graph 5.2.14 indicates that the largest major field of study in education was undergraduate university elementary/secondary teacher training (57%).

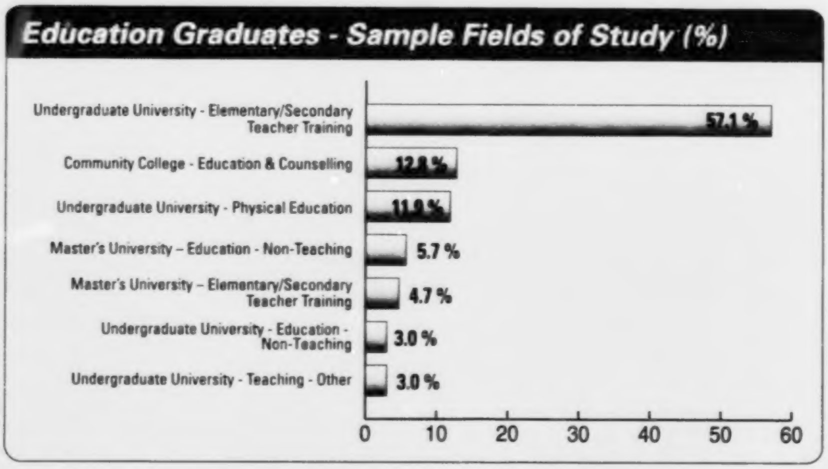
Currently labour market conditions for education graduates are rated as *fair*. This rating follows from the fact that the unemployment rate and earnings for these recent graduates were about the same as the average rates for all recent post-secondary graduates. Current labour market conditions are rated as *fair* for all education major fields of study, regardless of level. Over the 1999 to 2004 projection period labour market conditions are expected to remain *fair* although the number of new job openings available to these graduates is expected to slightly exceed the number of new job seekers, especially at the master's level of study.

Graph 5.2.13


Education Graduate Distribution by Level of Study (%)

Source: Statistics Canada, Educational Administrative Data (1997).

Graph 5.2.14


Education Graduates - Sample Fields of Study (%)

Source: Statistics Canada, Educational Administrative Data (1997).

Engineering and Engineering Technologies

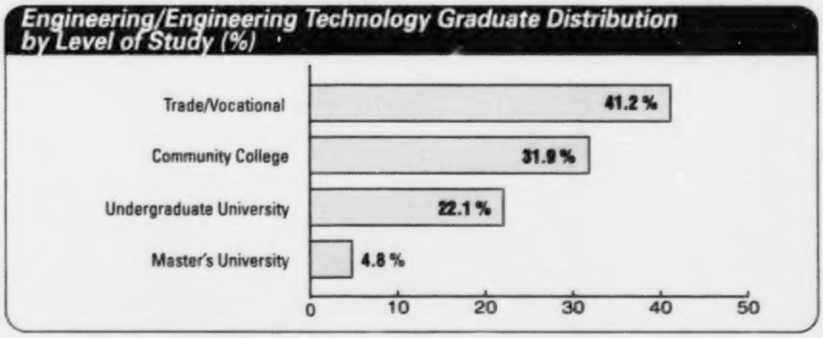
"Fair" labour market conditions are expected over the 1999-2004 period for engineering/engineering technology graduates....

16% of recent post-secondary school leavers had a qualification in engineering (technologies).

Graph 5.2.15 highlights the fact that a large share (41%) of engineering (technology) graduates received a trade/vocational certificate or diploma. Graph 5.2.16 indicates that the largest major field of study in engineering (technology) was community college electrical/electronic engineering technologies (9%).

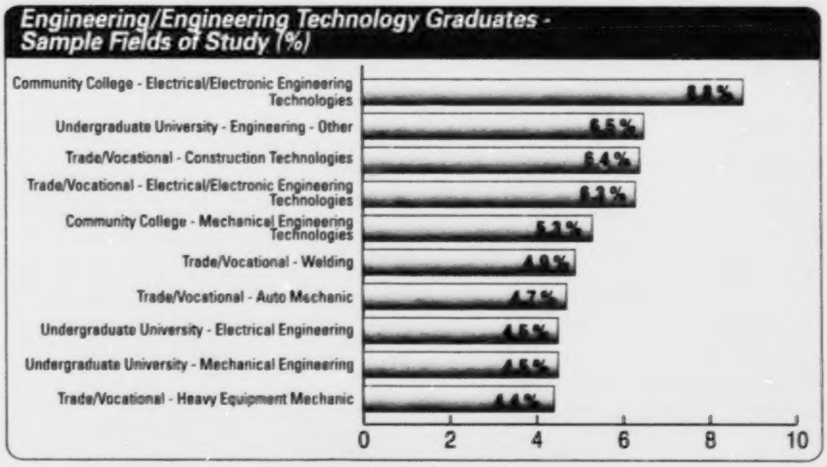
Currently labour market conditions for engineering (technology) graduates are rated as *fair*. This rating follows from the fact that the unemployment rate and earnings for these recent graduates were about the same as the average rates for all recent post-secondary graduates. Current labour market conditions are rated as *good* for university graduates and *fair* for community college and trade/vocational graduates. Over the 1999 to 2004 projection period labour market conditions are expected to remain *fair* although the number of new job openings available to these graduates is expected to slightly exceed the number of new job seekers.

Graph 5.2.15



Source: Statistics Canada, Educational Administrative Data (1997).

Graph 5.2.16



Source: Statistics Canada, Educational Administrative Data (1997).

Education

"Fair" labour market conditions over the 1999-2004 period are expected for education graduates....

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Graph 5.2.13 highlights the fact that most (75%) education graduates received an undergraduate university degree. Graph 5.2.14 indicates that the largest major field of study in education was undergraduate university elementary/secondary teacher training (57%).

Currently labour market conditions for education graduates are rated as *fair*. This rating follows from the fact that the unemployment rate and earnings for these recent graduates were about the same as the average rates for all recent post-secondary graduates. Current labour market conditions are rated as *fair* for all education major fields of study, regardless of level. Over the 1999 to 2004 projection period labour market conditions are expected to remain *fair* although the number of new job openings available to these graduates is expected to slightly exceed the number of new job seekers, especially at the master's level of study.

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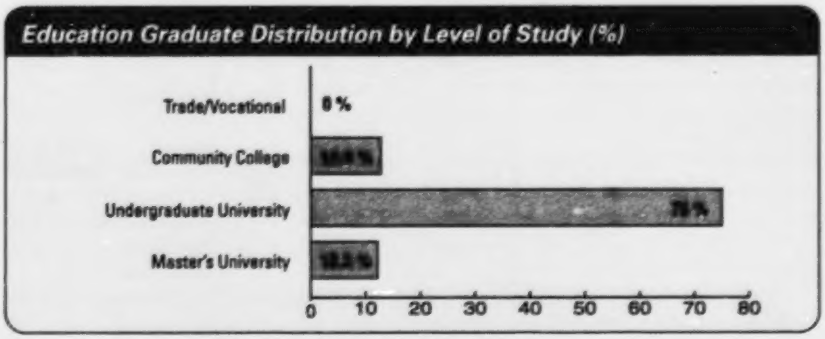
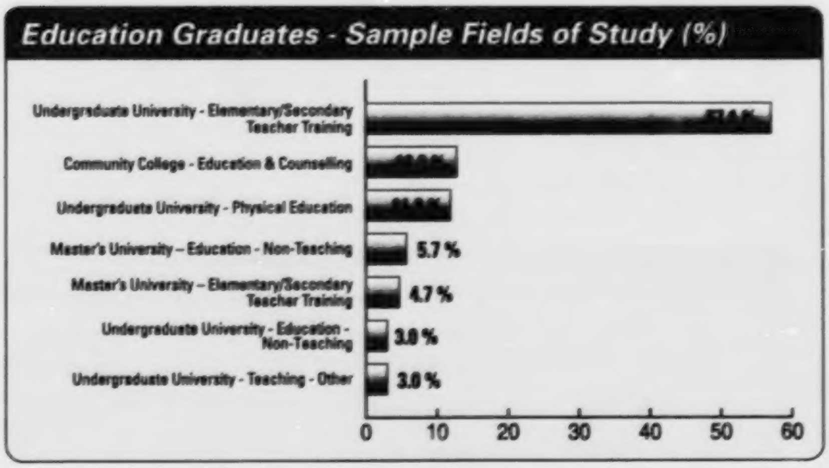


Source: Statistics Canada, Educational Administrative Data (1997).

Graph 5.2.14



Source: Statistics Canada, Educational Administrative Data (1997).

Engineering and Engineering Technologies

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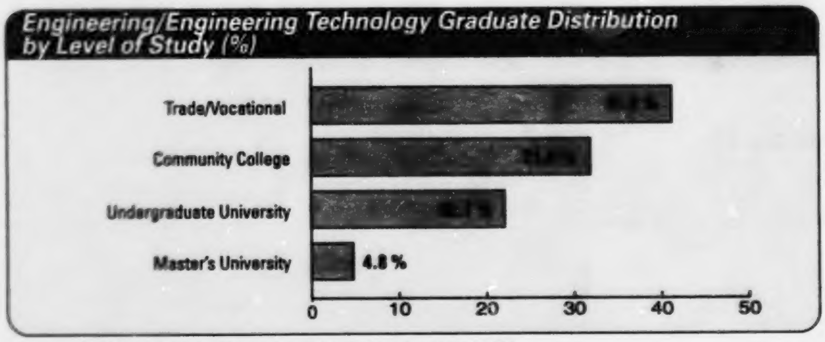
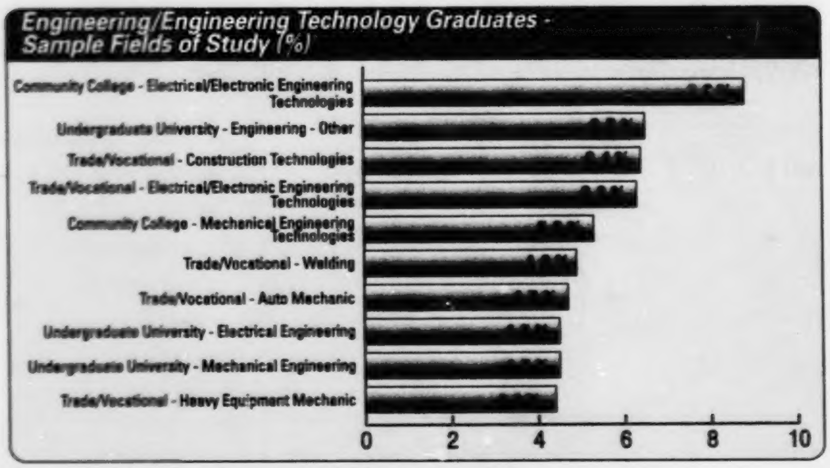


Source: Statistics Canada, Educational Administrative Data (1997).

Graph 5.2.16



Source: Statistics Canada, Educational Administrative Data (1997).

Humanities

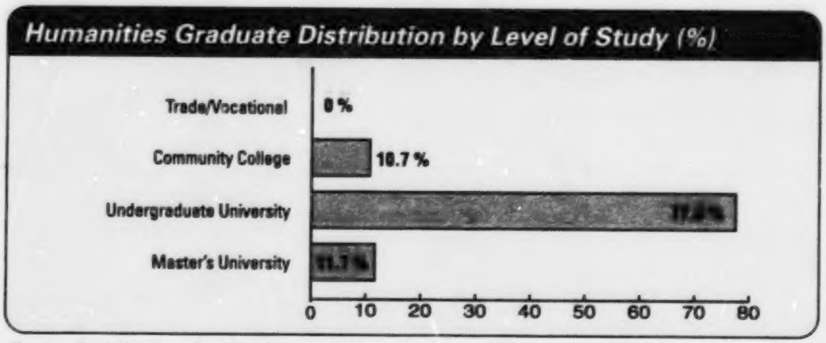
"Fair" labour market conditions are expected over the 1999-2004 period for humanities graduates....

8% of recent post-secondary school leavers had a qualification in humanities.

Graph 5.2.17 highlights the fact that most (78%) humanities graduates received an undergraduate university degree. Graph 5.2.18 indicates that the largest major field of study in humanities was undergraduate university English graduates (24%).

Currently labour market conditions for humanities graduates are rated as *fair.* This rating follows from the fact that the unemployment rate and earnings for these recent graduates were about the same as the average rates for all recent post-secondary graduates. Current labour market conditions are rated as *fair* across all the educational levels. Over the 1999 to 2004 projection period labour market conditions are expected to remain *fair* although the number of new job openings available to these graduates is expected to slightly exceed the number of new job seekers.

Graph 5.2.17



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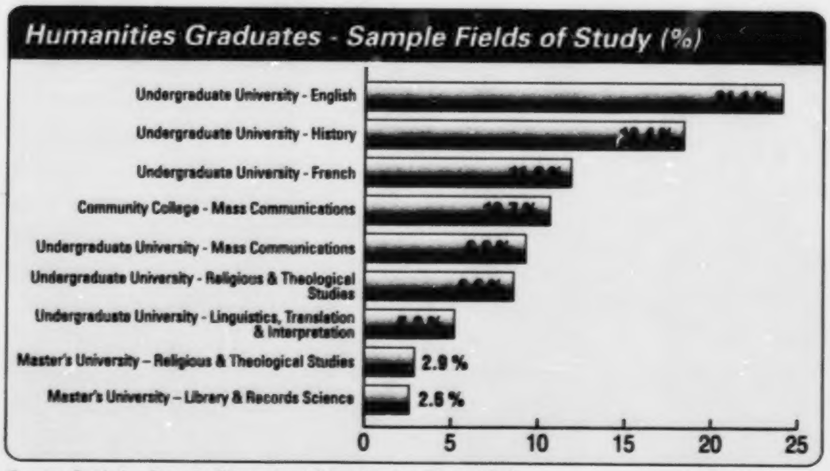
Graph 5.2.18



Source: Statistics Canada, Educational Administrative Data (1997).

Medicine and Health

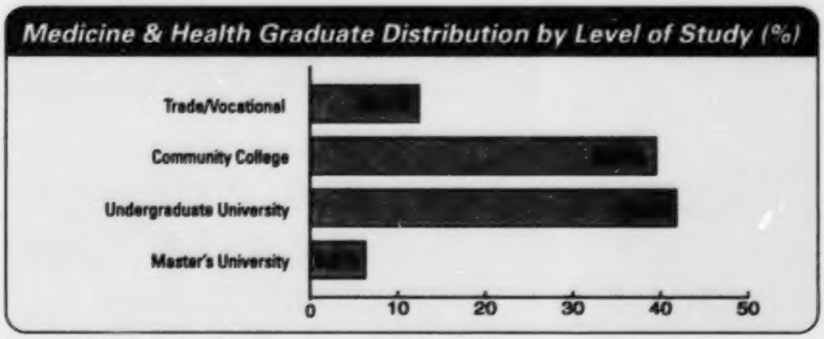
"Good" labour market conditions are expected over the 1999-2004 period for medicine and health graduates....

9% of recent post-secondary school leavers had a qualification in medicine and health.

Graph 5.2.19 highlights the fact that a large share (42%) of medicine and health graduates received an undergraduate university degree. Graph 5.2.20 indicates that the largest major field of study in medicine and health was undergraduate university nursing (18%).

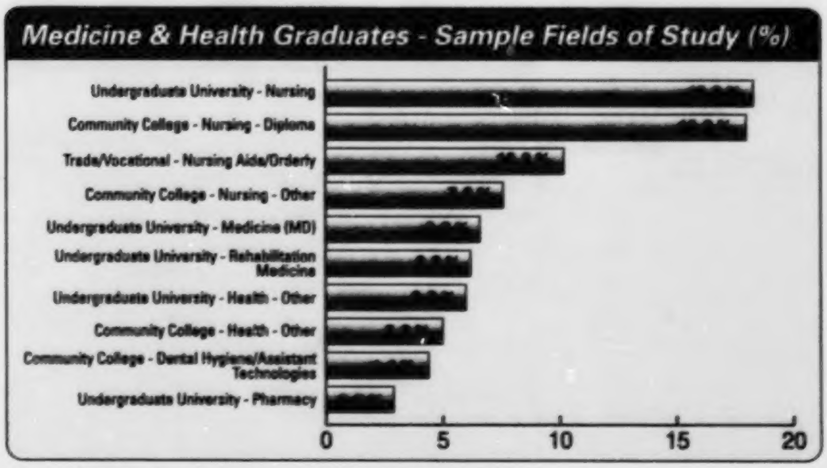
Currently labour market conditions for medicine and health graduates are rated as *good*. This rating follows from the fact that the unemployment rate and earnings for these recent graduates were more favourable than the average rates for all recent post-secondary graduates. Over the 1999 to 2004 projection period labour market conditions are expected to remain *good* as the number of new job openings available to these graduates is expected to exceed the number of new job seekers.

Graph 5.2.19



Source: Statistics Canada, Educational Administrative Data (1997).

Graph 5.2.20



Source: Statistics Canada, Educational Administrative Data (1997).

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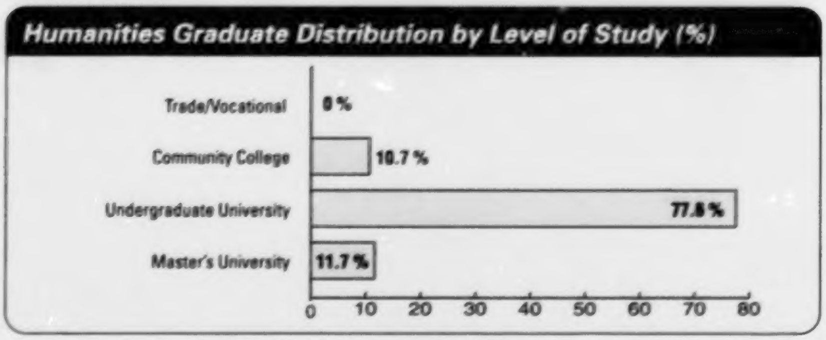
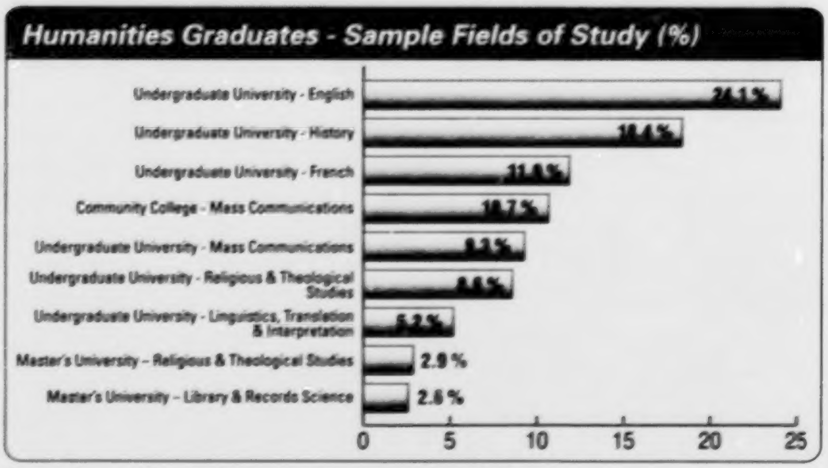


Humanities Graduate Distribution by Level of Study (%)

Source: Statistics Canada, Educational Administrative Data (1997)

Graph 5.2.18



Humanities Graduates - Sample Fields of Study (%)

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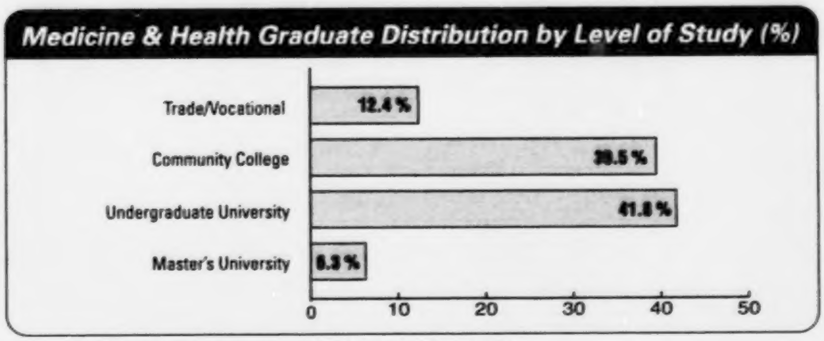
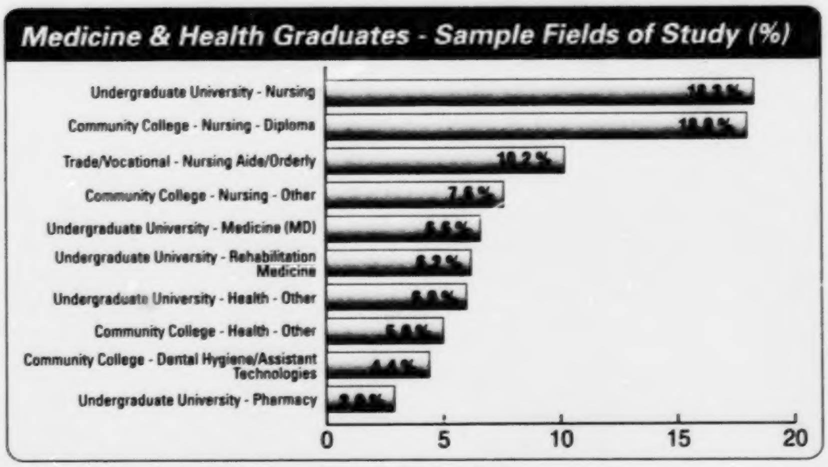
Currently labour market conditions for medicine and health graduates are rated as *good*. This rating follows from the fact that the unemployment rate and earnings for these recent graduates were more favourable than the average rates for all recent post-secondary graduates. Over the 1999 to 2004 projection period labour market conditions are expected to remain *good* as the number of new job openings available to these graduates is expected to exceed the number of new job seekers.

Graph 5.2.19



Source: Statistics Canada, Educational Administrative Data (1997).

Graph 5.2.20



Source: Statistics Canada, Educational Administrative Data (1997).

Natural Sciences and Primary Technologies

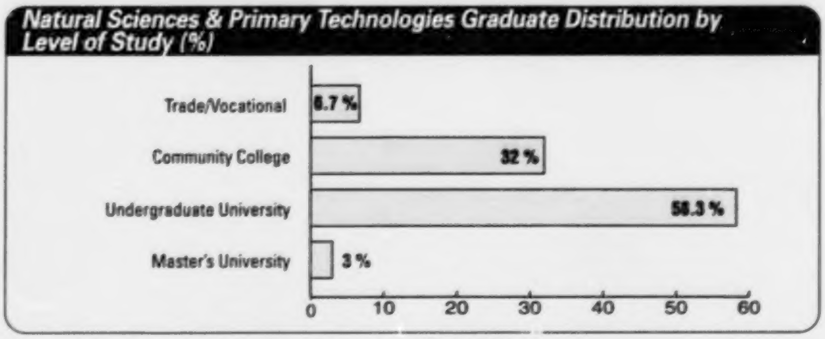
"Fair" labour market conditions are expected over the 1999-2004 period for natural sciences and primary technology graduates...

6% of recent post-secondary school leavers had a qualification in natural sciences and primary technologies.

Graph 5.2.21 highlights the fact that a large share (58%) of natural sciences and primary technology graduates received an undergraduate university degree. Graph 5.2.22 indicates that the largest major field of study in natural sciences and primary technologies was undergraduate university biology (40%).

Currently labour market conditions for natural sciences and primary technology graduates are rated as *fair*. This rating follows from the fact that the unemployment rate and earnings for these recent graduates were about the same as the average rates for all recent post-secondary graduates. Current labour market conditions are rated as *fair* for university graduates and *limited* for community college and trade/vocational graduates. Over the 1999 to 2004 projection period labour market conditions are expected to remain *fair* although the number of new job seekers is expected to slightly exceed the number of new job openings available to these graduates.

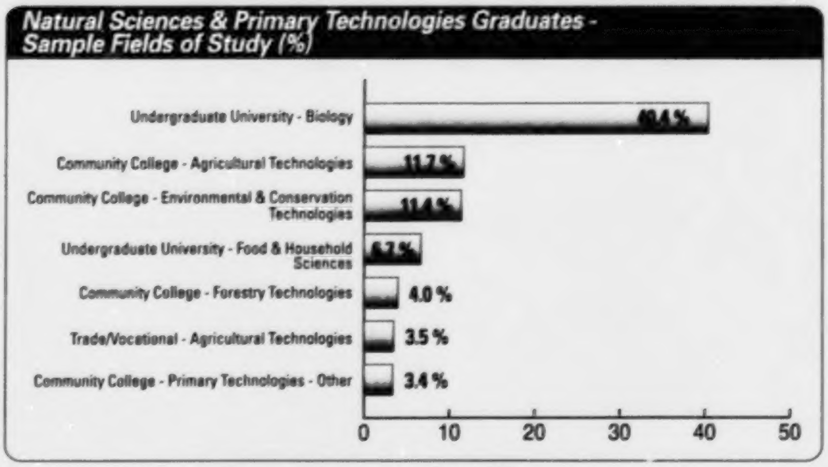
Graph 5.2.21



Natural Sciences & Primary Technologies Graduate Distribution by Level of Study (%)

Source: Statistics Canada, Educational Administrative Data (1997).

Graph 5.2.22



Natural Sciences & Primary Technologies Graduates - Sample Fields of Study (%)

Source: Statistics Canada, Educational Administrative Data (1997).

Physical Sciences

"Good" labour market conditions are expected over the 1999-2004 period for physical science graduates....

5% of recent post-secondary school leavers had a qualification in the physical sciences.

Graph 5.2.23 highlights the fact that a large share (54%) of physical science graduates received an undergraduate university degree. Graph 5.2.24 indicates that the largest major field of study in physical science was community college computer science (34%).

Currently labour market conditions for physical science graduates are rated as *good*. This rating follows from the fact that the unemployment rate and earnings for these recent graduates were more favourable than the average rates for all recent post-secondary graduates. Current labour market conditions are rated as *good* for university and community college graduates, primarily due to the outlook for computer science graduates, and *fair* for trade/vocational graduates. Over the 1999 to 2004 projection period labour market conditions are expected to remain *good* although the number of new job seekers is expected to slightly exceed the number of new job openings available to these graduates.

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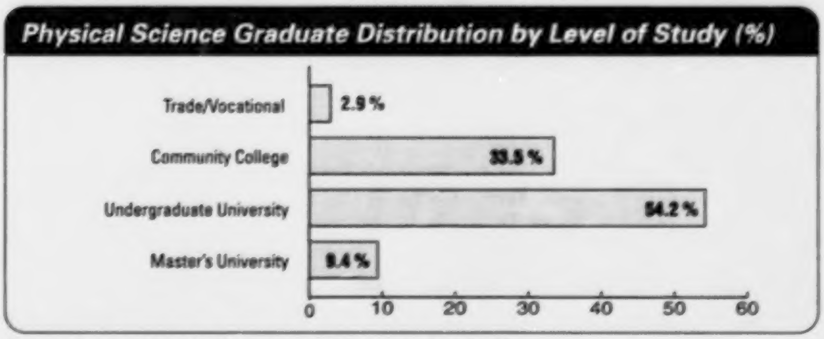
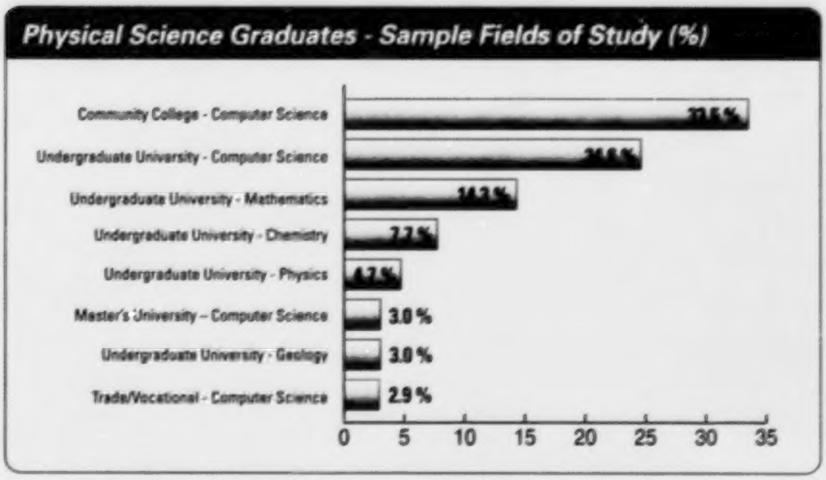


Physical Science Graduate Distribution by Level of Study (%)

Source: Statistics Canada, Educational Administrative Data (1997).

Graph 5.2.24



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Source: Statistics Canada, Educational Administrative Data (1997).

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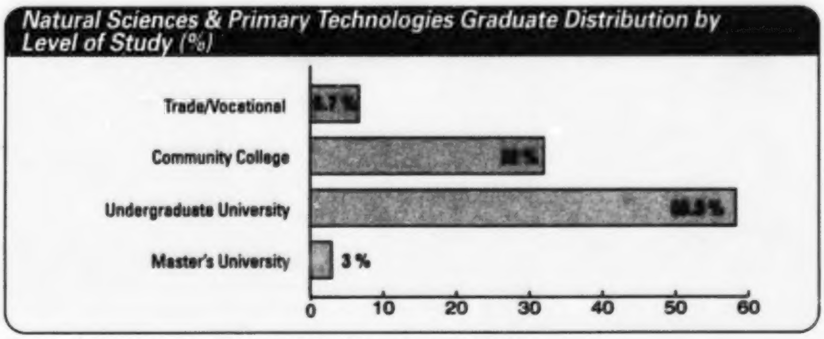
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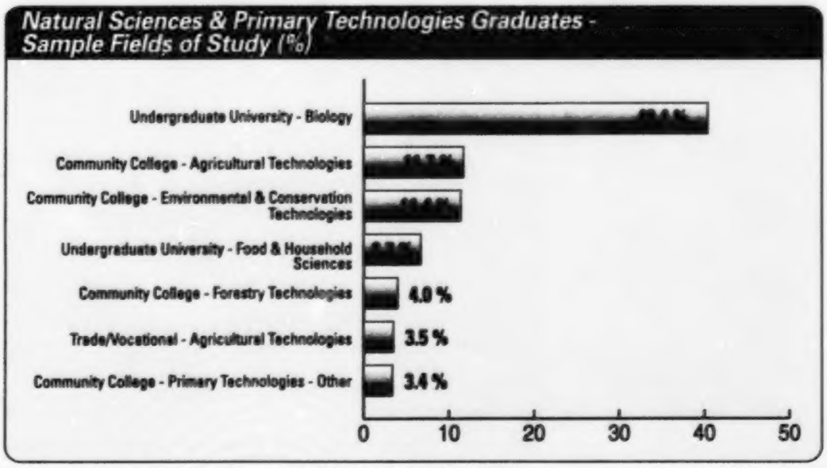
Source: Statistics Canada, Educational Administrative Data (1997).

Graph 5.2.22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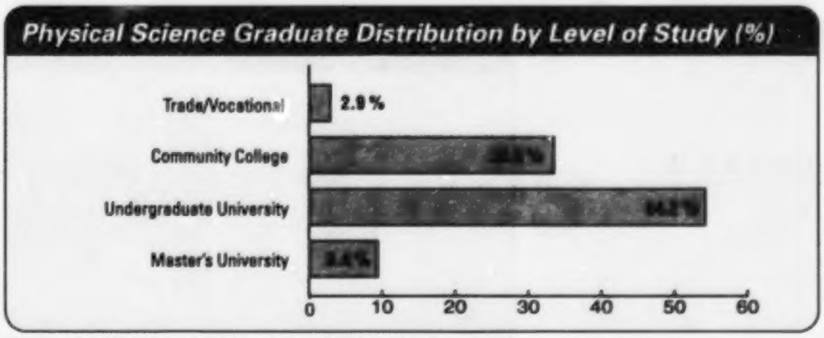
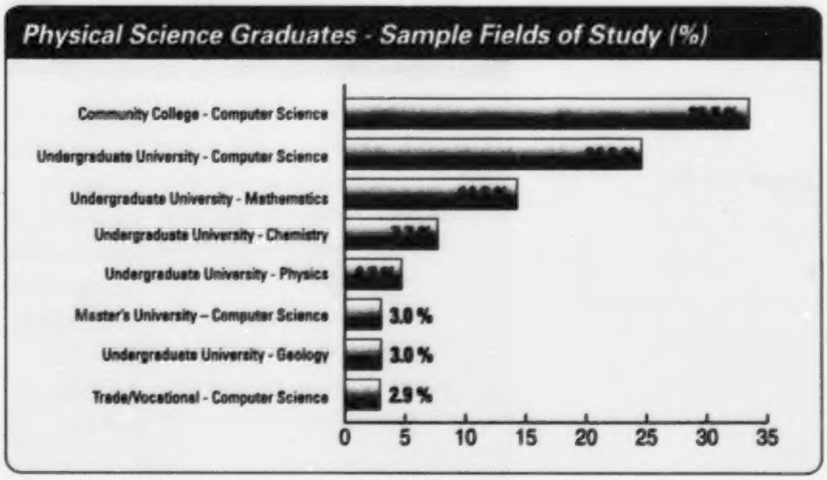


Source: Statistics Canada, Educational Administrative Data (1997).

Graph 5.2.24



Source: Statistics Canada, Educational Administrative Data (1997).

Social Sciences and Services

"Fair" labour market conditions are expected over the 1999-2004 period for social science and service graduates....

20% of recent post-secondary school leavers had a qualification in the social science and service area.

Graph 5.2.25 highlights the fact that most (61%) social science and service graduates received an undergraduate university degree. Graph 5.2.26 indicates that the largest major field of study in social science and services was undergraduate university psychology (18%).

Currently labour market conditions for social science and service graduates are rated as *fair.* This rating follows from the fact that the unemployment rate and earnings for these recent graduates were about the same as the average rates for all recent post-secondary graduates. Current labour market conditions are rated as *fair* for university and community college graduates and *limited* for trade/vocational graduates. Over the 1999 to 2004 projection period labour market conditions are expected to remain *fair* although the number of new job seekers is expected to slightly exceed the number of new job openings available to these graduates.

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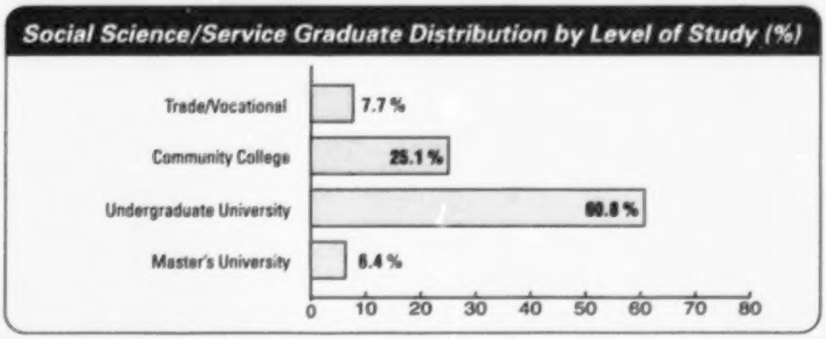
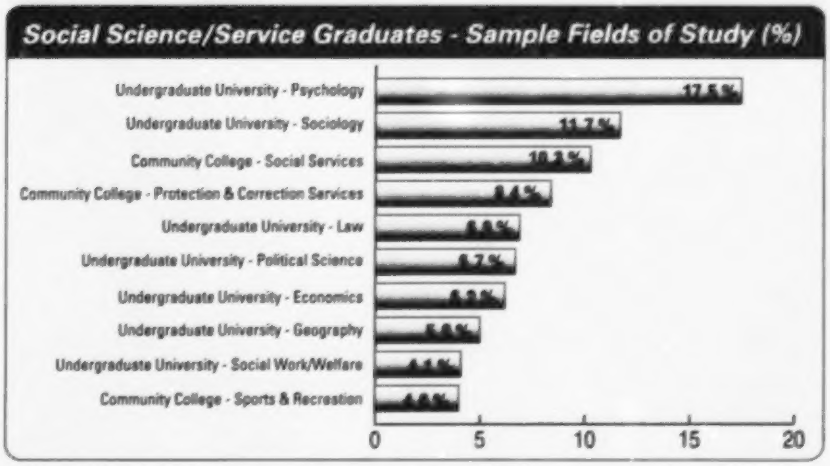

Social Science/Service Graduate Distribution by Level of Study (%)

Source: Statistics Canada, Educational Administrative Data (1997).

Graph 5.2.26


Social Science/Service Graduates - Sample Fields of Study (%)

Source: Statistics Canada, Educational Administrative Data (1997).

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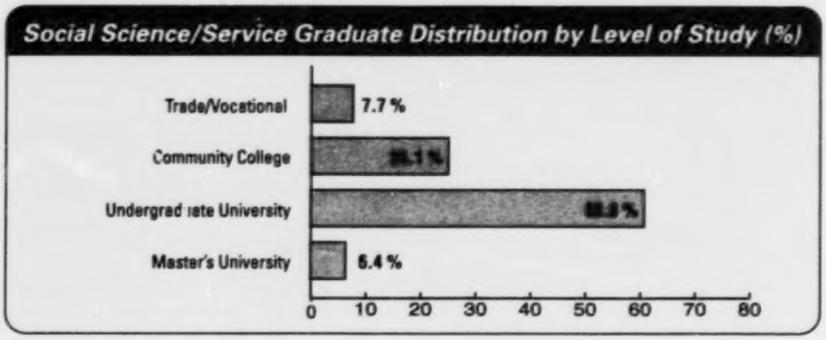
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Source: Statistics Canada, Educational Administrative Data (1997).

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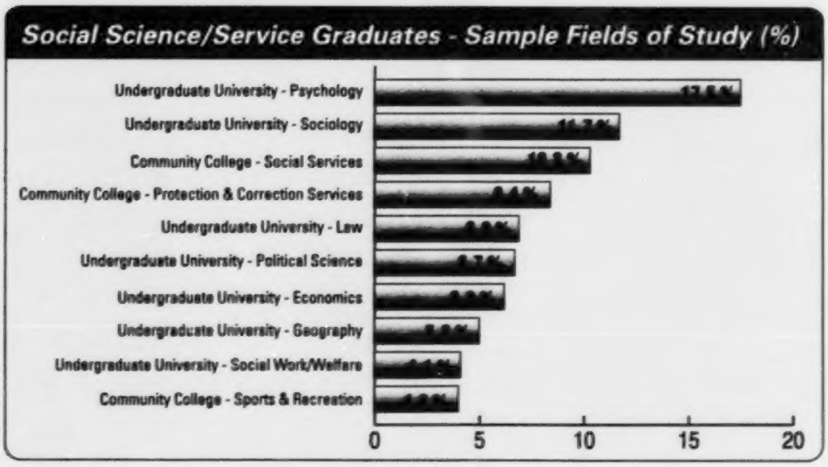
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Source: Statistics Canada, Educational Administrative Data (1997).

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Appendix B

Table A.3.1 — ***Detailed List of Starting and Lifetime Employment Earnings by Occupation and Skill Level***

NOC	Occupations	Starting Earnings ($)	Lifetime Employment Earnings ($)
	Management Occupations		
011	Administrative services managers	34 000	2 309 400
012	Managers in financial & business services	28 800	2 411 700
013	Managers in communication (except broadcasting)	30 500	2 313 700
021	Managers in engineering, architecture & information systems	37 200	2 577 200
031	Managers in health, education, social & community services	32 300	2 052 200
041	Managers in public administration	36 600	2 171 600
051	Managers in art, culture, recreation & sport	21 800	1 842 700
061	Sales, marketing & advertising managers	31 600	2 315 000
062	Managers in retail trade	17 300	1 392 600
063	Managers in food service & accommodation	18 600	1 190 000
064	Managers in protective services	30 700	2 217 300
065	Managers in other services	19 800	1 411 400
071	Managers in construction & transportation	31 700	1 930 000
072	Facility operation & maintenance managers	21 500	1 861 700
081	Managers in primary production (except agriculture)	40 500	2 967 700
091	Managers in manufacturing & utilities	29 000	2 429 700
	Occupations generally requiring a university diploma (Skill Level A)		
111	Auditors, accountants & investment professionals	32 600	2 181 400
112	Human resources & business service professionals	32 100	2 143 000
211	Physical science professionals	41 700	2 231 400
212	Life science professionals	36 400	1 945 700
213	Civil, mechanical, electrical & chemical engineers	41 000	2 228 700
214	Other engineers	40 900	2 271 300
215	Architects, urban planners & land surveyors	27 800	1 877 500
216	Mathematicians, systems analysts & computer programmers	36 500	1 973 700
311	Physicians, dentists & veterinarians	57 100	4 183 900
312	Optometrists, chiropractors & other health diagnosing & treating professionals	41 700	2 407 400
313	Pharmacists, dietitians & nutritionists	45 200	1 995 300
314	Therapy & assessment professionals	38 900	1 711 000
315	Nurse supervisors & registered nurses	35 300	1 566 900
411	Judges, lawyers & Quebec notaries	37 600	3 263 200
412	University professors & assistants	34 400	2 282 500
413	College & other vocational instructors	30 800	1 830 400
414	Secondary & elementary school teachers & counsellors	34 200	1 755 600
415	Psychologists, social workers, counsellors, clergy & probation officers	30 700	1 434 900
416	Policy & program officers, researchers & consultants	34 000	1 936 500
511	Librarians, archivists, conservators & curators	27 200	1 485 500
512	Writing, translating & public relations professionals	29 500	1 750 500
513	Creative & performing artists	15 600	1 361 200

NOC	Occupations	Starting Earnings ($)	Lifetime Employment Earnings($)
	Occupations generally requiring a college diploma (Skill Level B)		
121	Clerical supervisors	21 300	1 616 900
122	Administrative & regulatory occupations	24 900	1 589 200
123	Finance & insurance administrative occupations	21 300	1 368 700
124	Secretaries, recorders & transcriptionists	20 500	1 137 600
221	Technical occupations in physical sciences	31 200	1 810 800
222	Technical occupations in life sciences	27 800	1 551 000
223	Technical occupations in civil, mechanical & industrial engineering	31 400	1 904 000
224	Technical occupations in electronics & electrical engineering	28 900	1 654 000
225	Technical occupations in architecture, drafting, surveying & mapping	27 800	1 606 800
226	Other technical inspectors & regulatory officers	32 100	1 822 100
227	Transportation officers & controllers	34 100	2 548 700
321	Medical technologists & technicians (except dental health)	29 200	1 604 900
322	Technical occupations in dental health care	37 100	1 501 000
323	Other technical occupations in health care (except dental)	27 300	1 256 600
421	Paralegals, social services workers & occupations in education & religion n.e.c.	23 900	1 344 700
521	Technical occupations in libraries, archives, museums & galleries	21 200	1 259 300
522	Photographers, graphic arts technicians	20 900	1 409 200
523	Announcers & other performers	21 100	1 800 100
524	Creative designers & craftspersons	22 000	1 186 000
525	Athletes, coaches, referees & related occupations	21 100	1 368 900
621	Sales & service supervisors	16 600	1 288 700
622	Technical sales specialists, wholesale trade	25 900	2 038 400
623	Insurance & real estate sales occupations & buyers	24 600	1 626 700
624	Chefs & cooks	13 400	916 400
625	Butchers & bakers	16 200	1 067 300
626	Police officers & fire-fighters	40 000	2 089 700
627	Technical occupations in personal service	16 900	804 400
721	Contractors & supervisors, trades & related workers	28 200	1 805 500
722	Supervisors, railway & motor transportation occupations	23 300	1 784 700
723	Machinists & related occupations	28 800	1 661 000
724	Electrical trades & telecommunications occupations	33 700	1 822 000
725	Plumbers, pipefitters & gas fitters	32 700	1 596 000
726	Metal forming, shaping & erecting occupations	28 900	1 616 700
727	Carpenters & cabinetmakers	20 100	1 244 800
728	Masonry & plastering trades	16 900	1 387 700
729	Other construction trades	17 900	1 301 600
731	Machinery & transportation equipment mechanics (except motor vehicle)	32 100	1 774 600
732	Motor vehicle mechanics	23 900	1 309 900
733	Other mechanics	22 300	1 308 700
734	Upholsterers, tailors, shoe repairers, jewellers & related occupations	16 300	899 300
735	Stationary engineers & power station & system operators	46 600	1 892 800
736	Train crew operating occupations	29 800	2 791 000
737	Crane operators, drillers & blasters	29 900	1 859 200
738	Printing press operators, commercial divers & other trades	21 700	1 556 600
821	Supervisors, logging & forestry	24 700	2 107 800
822	Supervisors, mining, oil & gas	29 000	2 562 300
823	Underground miners, oil & gas drillers & related workers	35 700	2 330 900
824	Logging machinery operators	40 700	1 783 500
825	Contractors, operators & supervisors in agriculture, horticulture & aquaculture	15 500	956 300
826	Fishing vessel masters & skippers & fishermen/women	24 300	1 408 700
921	Supervisors, processing occupations	21 200	1 991 400
922	Supervisors, assembly & fabrication	22 500	1 789 100
923	Central control & process operators in manufacturing & processing	25 500	2 157 900

NOC	Occupations	Starting Earnings ($)	Lifetime Employment Earnings ($)
	Occupations generally requiring a high school diploma (Skill Level C)		
141	Clerical occupations, general office skills	18 200	1 141 100
142	Office equipment operators	20 000	1 265 000
143	Finance & insurance clerks	20 300	1 219 100
144	Administrative support clerks	24 400	1 339 500
145	Library, correspondence & related information clerks	20 500	1 269 500
146	Mail & message distribution occupations	18 300	1 323 800
147	Recording, scheduling & distributing occupations	18 300	1 350 900
341	Assisting occupations in support of health services	21 300	1 020 300
641	Sales representatives, wholesale trade	23 000	1 742 000
642	Retail salespersons & sales clerks	15 700	1 151 200
643	Occupations in travel & accommodation	19 800	1 191 000
644	Tour & recreational guides & amusement occupations	24 900	1 062 000
645	Occupations in food & beverage service	12 800	728 000
646	Other occupations in protective service	21 700	1 584 000
647	Childcare & home support workers	14 400	757 000
648	Other occupations in personal service	16 400	812 000
741	Motor vehicle & transit drivers	18 400	1 410 500
742	Heavy equipment operators	25 400	1 644 800
743	Other transport equipment operators & related workers	19 300	1 600 000
744	Other installers, repairers & servicers	16 600	1 323 900
745	Longshore workers & material handlers	17 900	1 465 500
841	Mine service workers & operators in oil & gas drilling	38 800	2 032 100
842	Logging & forestry workers	27 200	1 490 400
843	Agriculture & horticulture workers	11 600	858 700
844	Other fishing & trapping occupations	24 100	591 000
941	Machine operators & related workers in metal & mineral products processing	23 800	1 662 000
942	Machine operators & related workers in chemical, plastic & rubber processing	17 500	1 453 600
943	Machine operators in pulp & paper production	20 300	1 702 000
944	Machine operators & related workers in textile processing	18 000	1 087 400
945	Machine operators in fabric, fur & leather products manufacturing	16 200	842 100
946	Machine operators & related workers in food, beverage & tobacco processing	17 700	1 372 600
947	Printing machine operators & related occupations	16 900	1 322 500
948	Mechanical, electrical & electronics assemblers	22 100	1 556 500
949	Other assembly & related occupations	15 700	1 210 000
951	Machining, metalworking, woodworking & related machine operators	22 700	1 470 500
	Occupations not generally requiring a high school diploma (Skill Level D)		
661	Cashiers	11 800	837 000
662	Other sales & related occupations	13 100	1 051 000
663	Elemental medical & hospital assistants	25 400	1 108 000
664	Food counter attendants & kitchen helpers	10 600	819 700
665	Security guards & related occupations	19 500	1 116 000
666	Cleaners	14 700	1 072 000
667	Other attendants in travel, accommodation & recreation	15 400	1 128 000
668	Other elemental service occupations	13 300	900 000
761	Trades helpers & labourers	15 900	1 387 700
762	Public works & other labourers n.e.c.	19 400	1 386 800
861	Primary production labourers	22 500	1 383 700
961	Labourers in processing, manufacturing & utilities	18 000	1 325 300

Source: John Appleby et al., 'Distribution of Rates of Return by Field of Study and Level of Education in Canada', Human Resources Development Canada, Applied Research Branch, fall 2000.

Table A.3.3[1] — *Detailed List of Distribution of Rates of Return to Education by Field of Study*

University Level (Undergraduate)

Field of Study	Median (%)	Minimum/ Maximum (%)
Education		
Physical Education, Recreation & Tourism	8.1	1.7 to 17.6
Teaching	9.3	1.2 to 18.3
Educational Support	12.0	3.6 to 23.0
Counselling & Personal Development	12.8	2.2 to 26.8
Arts & Humanities		
Religious Studies	1.5	-21.3 to 12.8
Fine Arts	6.3	-3.4 to 14.9
Music	6.2	-1.4 to 15.6
Audio-Visual Arts	8.4	1.1 to 16.7
History	9	1.6 to 19.9
Journalism	9.5	2.7 to 19.8
English	9.1	1.4 to 18.1
Literature	10.8	3.4 to 20.7
Administration & Social Sciences		
Anthropology	6.7	-2.1 to 16.9
Sociology	8.3	1.0 to 18.4
Psychology	8.4	1.8 to 16.8
Geography	9.7	2.1 to 20.3
Political Science	10.5	3.8 to 19.1
Ethnic Studies	11.8	3.1 to 21.6
Environment & Regional Planning	12.4	5.2 to 24.0
Business & Commerce	13.1	5.8 to 24.4
Economics	13.3	5.5 to 24.3
Law	15.9	9.3 to 26.2
Chemistry, Physical & Natural Sciences		
Agriculture	6.9	-1.8 to 15.4
Biology & Biochemistry	7.7	0.2 to 16.9
Geology	9.2	2.7 to 17.6
Nutrition, Consumer & Domestic Science	10.8	3.3 to 20.9
Chemistry	11.3	3.8 to 21.6
Physics	11.5	3.6 to 21.7
Actuarial Sciences	12.0	4.9 to 21.8
Architecture & Engineering		
Architecture	9.7	2.8 to 19.2
Forestry	9.6	3.0 to 18.4
Engineering Physics	13.3	6.0 to 23.7
Industrial Engineering	13.7	6.1 to 23.8
Civil Engineering	15.4	8.1 to 24.3
Mechanical Engineering	16.2	8.8 to 25.4
Biological & Resource Engineering	16.4	8.5 to 25.8
Electronic Engineering	17.4	9.7 to 28.2
Health		
Rehabilitation Medicine	9.9	1.5 to 18.1
Nursing	12.6	2.6 to 25.4
Pharmacy	12.6	3.9 to 24.5
Dentistry	21.4	12.1 to 33.2
Medicine (GP)	22.8	14.6 to 33.7

Table A.3.4[1] — *Detailed List of Distribution of Rates of Return to Education by Field of Study*

College Level

Field of Study	Median (%)	Minimum/ Maximum (%)
Education		
Counselling & Personal Development	2.0	-23 to 18
Physical Education	8.0	-8.2 to 27.9
Teaching	9.4	-5.6 to 31.3
Arts & Humanities		
Performing Arts	5.1	-25.3 to 23.7
Commercial Arts	7.9	-8.9 to 27.1
Library Sciences & Museum Technology	8.5	-6.9 to 27.6
Audio-Visual Arts	9.3	-7.4 to 29.2
Journalism	16.1	1.8 to 37.1
Administration & Social Sciences		
Business & Commerce	11.8	-3.0 to 32 2
Social Services	16.3	-1.7 to 43.8
Agriculture & Domestic Science		
Agriculture	3.6	-17.9 to 23.4
Animal Husbandry	5.6	-14.6 to 24.0
Nutrition, Consumer & Domestic Science	6.2	-18.4 to 25.2
Architecture, Mathematics & Engineering		
Building Technology	6.1	-11.1 to 26.1
Industrial Engineering Technologies	12.1	-4.3 to 31.9
Architectural Technology	16.9	2.3 to 37.2
Actuarial Science	16.8	0.4 to 39.6
Civil Engineering Technologies	17.8	-1.0 to 37.7
Biological Resource Engineering	17.9	0.8 to 37.7
Chemical Technology	18.2	2.3 to 38.1
Electrical & Mechanical Engineering Technologies	19.5	1.0 to 48.1
Data Processing	21.0	4.1 to 43.1
Primary Resource Engineering Technologies	22.3	5.9 to 47.5
Health		
Nursing	8.8	-5.7 to 29.5
Medical Laboratory Technology	16.2	-0.08 to 38.7
Public Health, Epidemiology & Biostatistics	16.8	-0.3 to 47.8

Source: John Appleby et al., 'Distribution of Rates of Return by Field of Study and Level of Education in Canada', Human Resources Development Canada, Applied Research Branch, fall 2000.

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[1] Please note that these field of study titles may not correspond exactly to those used in *Part 2: Outlooks by Field of Study*, due to different data sources.

Table A.3.5[2] — *Detailed List of Unemployment Rates by Occupation and Skill Level (%)*

		Average of the 1996-1998 Period
National Unemployment Rate		**6.0**
Professional Occupations: those usually requiring a university degree (Skill Level A)		**2.9**
311	Physicians, Dentists and Veterinarians	0.6
312	Opt., Chiro. & Other Health Diag. & Treating Professionals	1.1
315	Nurse Supervisors and Registered Nurses	1.4
314	Therapy and Assessment Professionals	1.6
411	Judges, Lawyers and Quebec Notaries	1.8
313	Pharmacists, Dietitians and Nutritionists	1.9
415	Psychologists, Social Workers, Counsellors, Clergy & Probation Officers	2.5
213	Civil, Mechanical, Electrical and Chemical Engineers	2.5
111	Auditors, Accountants and Investment Professionals	2.7
216	Mathematicians, Systems Analysts and Computer Programmers	2.7
414	Secondary & Elem. School Teachers and Counsellors	2.8
112	Human Resources and Business Service Professionals	2.8
214	Other Engineers	3.0
511	Librarians, Archivists, Conservators and Curators	3.6
215	Architects, Urban Planners and Land Surveyors	4.0
416	Policy and Program Officers	4.3
212	Life Science Professionals	4.4
512	Writing, Translating and Public Relations Professionals	4.7
211	Physical Science Professionals	4.8
413	College and Other Vocational Instructors	4.9
412	University Professors and Assistants	5.0
513	Creative and Performing Artists	5.1
Technical, Paraprofessional, Skilled Occupations: those usually requiring a college/trade diploma (Skill Level B)		**5.2**
626	Police Officers and Firefighters	1.1
825	Contractors, Operators & Supervisors in Agriculture, Horticulture & Aquaculture	1.5
736	Train Crew Operating Occupations	1.6
321	Medical Technologists & Technicians (except Dental Health)	2.0
623	Insurance and Real Estate Sales Occs and Buyers	2.0
722	Supervisors, Railway and Motor Transportation Occupations	2.1
323	Other Technical Occs in Health Care (except Dental)	2.3
322	Technical Occupations in Dental Health Care	2.4
735	Stationary Engineers & Power Station & System Ops	2.6
921	Supervisors, Processing Occupations	2.6
922	Supervisors, Assembly and Fabrication	2.6
123	Finance and Insurance Administrative Occupations	2.7
122	Administrative and Regulatory Occupations	2.9
224	Technical Occs in Electronics and Electrical Engineering	3.0
627	Technical Occupations in Personal Service	3.2
121	Clerical Supervisors	3.6
622	Technical Sales Specialists, Wholesale Trade	3.6
923	Central Control and Process Operators in Manufacturing and Processing	3.6
721	Contractors and Supervisors, Trades & Related Workers	3.6
822	Supervisors, Mining, Oil and Gas	3.7
221	Technical Occupations in Physical Sciences	3.9
223	Technical Occs in Civil, Mech., and Ind. Engineering	4.0
723	Machinists and Related Occupations	4.0
621	Sales and Service Supervisors	4.1
421	Paralegals, Soc. Service Workers & Occs in Ed./Religion, n.e.c.	4.2
227	Transportation Officers and Controllers	4.3
731	Mach. & Trans. Equipment Mech. (except Motor Vehicle)	4.6

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[2] The unemployment rate for all occupations includes, as unemployed, only those unemployed persons who also held employment within the past twelve months, because they can be classified to an occupation. The result is that the unemployment rate in *Job Futures 2000* is considerably lower than that for the entire labour force which is often the one reported in the media.

524	Creative Designers and Craftspersons	4.7
521	Tech. Occs in Lib., Archives, Museums & Galleries	4.7
225	Technical Occs in Arch., Draft., Surveying and Mapping	4.9
738	Printing Press Ops, Comm. Divers & Related Occs, n.e.c.	5.0
124	Secretaries, Recorders and Transcriptionists	5.1
226	Other Technical Inspectors and Regulatory Officers	5.3
732	Motor Vehicle Mechanics	6.0
522	Photo., Graphic Arts Tech. & Motion Pic., Brdcst & Arts	6.3
523	Announcers and Other Performers	6.6
821	Supervisors, Logging and Forestry	6.8
734	Upholsterers, Tailors, Shoe Rep., Jewellers & Related Occupations	7.2
724	Electrical Trades and Telecommunications Occupations	7.3
733	Other Mechanics	7.5
823	Underground Miners, Oil & Gas Drillers & Rel. Workers	7.5
625	Butchers and Bakers	7.9
826	Fishing Vessel Masters, Skippers, Fishermen/Women	8.5
737	Crane Operators, Drillers and Blasters	8.9
525	Athletes, Coaches, Referees and Related Occupations	9.6
624	Chefs and Cooks	10.1
725	Plumbers, Pipefitters and Gas Fitters	10.3
222	Technical Occupations in Life Sciences	11.4
726	Metal Forming, Shaping and Erecting Occupations	12.1
727	Carpenters and Cabinetmakers	14.2
729	Other Construction Trades	15.2
728	Masonry and Plastering Trades	16.6
824	Logging Machinery Operators	19.4

Intermediate Occupations: those usually requiring a high school diploma (Skill Level C)		**7.2**
341	Assisting Occs in Support of Health Services	3.0
143	Finance and Insurance Clerks	3.4
643	Occupations in Travel and Accommodation	4.1
641	Sales Representatives, Wholesale Trade	4.2
646	Other Occupations in Protective Service	4.5
146	Mail and Message Distribution Occupations	4.7
144	Administrative Support Clerks	4.8
648	Other Occupations in Personal Service	5.5
141	Clerical Occupations, General Office Skills	6.2
147	Recording, Scheduling and Distributing Occupations	6.2
942	Mach. Ops & Rel. Wkrs in Chem., Plastic & Rubber Proc.	6.2
948	Mechanical, Electrical and Electronics Assemblers	6.2
941	Mach. Ops & Rel. Workers in Metal & Min. Prod. Proc.	6.3
943	Mach. Ops & Rel. Wkrs in Pulp & Paper Production & Wood Processing	6.8
642	Retail Salespersons and Sales Clerks	6.9
741	Motor Vehicle and Transit Drivers	7.1
947	Printing Machine Operators and Related Occupations	7.2
647	Childcare and Home Support Workers	7.3
743	Other Transport Equipment Ops and Related Workers	7.3
142	Office Equipment Operators	7.6
944	Mach. Ops & Related Workers in Textile Processing	7.9
145	Library, Correspondence and Related Information Clerks	7.9
951	Machining, Mtlwrkng, Wdwrkng & Related Mach. Ops	8.2
645	Occupations in Food and Beverage Service	9.0
949	Other Assembly and Related Occupations	9.3
945	Mach. Ops & Rel. Wkrs in Fabric, Fur & Leather Products Manu.	9.9
744	Other Installers, Repairers and Servicers	10.3
745	Longshore Workers and Material Handlers	11.0
946	Mach. Ops & Rel. Wkrs in Food, Beverage & Tobacco Proc.	11.4
843	Agriculture and Horticulture Workers	11.8

742	Heavy Equipment Operators	13.1
841	Mine Service Workers & Operators in Oil & Gas Drilling	13.1
644	Tour and Recreational Guides and Amusement Occs	15.3
842	Logging and Forestry Workers	24.1
844	Other Fishing and Trapping Occupations	32.3
Labouring & Elemental Occupations: those usually requiring less than high school graduation (Skill Level D)		**10.9**
663	Elemental Medical and Hospital Assistants	3.6
661	Cashiers	7.1
665	Security Guards and Related Occupations	7.6
668	Other Elemental Service Occupations	7.8
666	Cleaners	8.5
664	Food Counter Attendants and Kitchen Helpers	8.8
662	Other Sales and Related Occupations	8.8
961	Labourers in Processing, Manufacturing and Utilities	12.1
667	Other Attendants in Travel, Accommodation and Rec	12.9
762	Public Works and Other Labourers, n.e.c.	13.0
761	Trades Helpers and Labourers	24.1
861	Primary Production Labourers	24.1
Management Occupations		**2.8**
013	Managers in Communication (except Broadcasting)	0.9
021	Managers in Eng., Arch., Science and Info. Systems	1.8
041	Managers in Public Administration	1.9
031	Mgrs in Health, Educ., Social and Comm. Services	2.0
001	Legislators and Senior Management	2.0
081	Managers in Primary Production (except Agriculture)	2.1
012	Managers in Financial and Business Services	2.2
011	Administrative Services Managers	2.4
061	Sales, Marketing and Advertising Managers	2.4
065	Managers in Other Services	2.4
091	Managers in Manufacturing and Utilities	2.6
062	Managers in Retail Trade	3.2
071	Managers in Construction and Transportation	3.3
072	Facility Operation and Maintenance Managers	3.8
051	Managers in Art, Culture, Recreation and Sport	4.2
063	Managers in Food Service and Accommodation	4.4
064	Managers in Protective Service	10.0

Source: Statistics Canada, Labour Force Survey, average of the 1996-1998 period.

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Appendix C

Table A.4.1 — *Across Canada – Summary of Methodologies By Province*

There are several factors which may influence how qualitative and quantitative information is synthesized, analyzed and interpreted in order to arrive at a realistic view of current or future prospects for finding work. These factors include: the type, sources, and timing of data used; the resources available to undertake the analysis; variations in forecasting or projection methods and models; and key experts available to validate the projections.

The table below presents a brief summary of the methodology used by the COPS[1] partners for each province, to arrive at their respective forecasts and list of sample occupations with a favourable outlook found in Chapter 4. Methodologies, data and forecast periods may differ. We also encourage you to consult the provincial Job Futures or equivalent Internet sites provided with each sample list on the map in Chapter 4 for additional information, including profiles and outlooks for other occupations and more detail on methodologies.

Province	Outlook Period	Latest Year of Data Used	The outlook rating is based on:
Canada	1999 to 2004	Earnings – 1997 Labour Force – 1998 Consultations – 1999	• Most recent occupational forecast prepared by HRDC on: - expected employment growth (expansion demand, replacement demand); - expected supply of labour; and • Qualitative input from industry associations, professional groups, unions and sector councils.
Newfoundland	1998 to 2003	Earnings – 1998 Graduate Survey – 1999 Consultations – 2000	• Most recent occupational forecast of expected employment growth; • Information on graduate follow-up; and • Qualitative input from industry and professional associations.
Nova Scotia	1999 to 2003	1998	• Most recent occupational forecast prepared by HRDC NS region; and • Qualitative and quantitative information for occupations using different economic indicators (i.e. number of job openings, proxy rates of unemployment, etc.).
Prince Edward Island	1999 to 2003	Earnings – 1996 & 1998 Industrial and Occupational Trends – 1998 Consultations – 1999	• Most recent occupational forecast prepared by HRDC PEI; • Consultations on conditions, trends and outlooks with employers, professional associations, industry groups, unions, training institutions and regulatory bodies; and • Analysis by PEI Job Futures' researchers and LMI team.
New Brunswick	1999 to 2004	Earnings -1996 Labour Force – 1998 Consultations – 1999 & 2000	• Most recent occupational forecast prepared by HRDC on: - expected employment growth; - expected supply of labour; and • Qualitative input from industry associations, professional groups, unions and sector councils.

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[1] The COPS (Canadian Occupational Projection System) partners are a group of labour market specialists coordinated by the Applied Research Branch at national headquarters of HRDC, with representatives from each provincial department of education or labour and each HRDC regional office across Canada.

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Province	Outlook Period	Latest Year of Data Used	The outlook rating is based on:
Canada	1999 to 2004	Earnings – 1997 Labour Force – 1998 Consultations – 1999	• Most recent occupational forecast prepared by HRDC on: - expected employment growth (expansion demand, replacement demand); - expected supply of labour; and • Qualitative input from industry associations, professional groups, unions and sector councils.
Newfoundland	1998 to 2003	Earnings – 1998 Graduate Survey – 1999 Consultations – 2000	• Most recent occupational forecast of expected employment growth; • Information on graduate follow-up; and • Qualitative input from industry and professional associations.
Nova Scotia	1999 to 2003	1998	• Most recent occupational forecast prepared by HRDC NS region; and • Qualitative and quantitative information for occupations using different economic indicators (i.e. number of job openings, proxy rates of unemployment, etc.).
Prince Edward Island	1999 to 2003	Earnings – 1996 & 1998 Industrial and Occupational Trends – 1998 Consultations – 1999	• Most recent occupational forecast prepared by HRDC PEI; • Consultations on conditions, trends and outlooks with employers, professional associations, industry groups, unions, training institutions and regulatory bodies; and • Analysis by PEI Job Futures' researchers and LMI team.
New Brunswick	1999 to 2004	Earnings -1996 Labour Force – 1998 Consultations – 1999 & 2000	• Most recent occupational forecast prepared by HRDC on: - expected employment growth; - expected supply of labour; and • Qualitative input from industry associations, professional groups, unions and sector councils.

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Province	Outlook Period	Latest Year of Data Used	The outlook rating is based on:
Quebec	1999 to 2005	1998	• The most recent occupational outlooks produced by the Quebec regional office of HRDC are based on anticipated growth in labour force supply and demand; and • Qualitative information from consultations with professional and industry associations and key stakeholders.
Ontario	1999 to 2008	1998	• Examination of supply-demand indicators; and • Information from employers on hiring difficulties collected during the 1999 Ontario Wage Survey.
Manitoba	2000 to 2001	1999	• COPS 2000 and 2001 demand forecast; • Demand/supply gap analysis; and • Consultations at industrial, governmental and educational levels to accept or reject the ratings.
Saskatchewan	1998 to 2003	1998	• Demand forecast (expected occupational employment requirements and attrition); • Consultation with LMI analysts; and • Consultants report on short-term (five year) forecasts of shortages at the occupational level using supply and demand indicators to identify occupations "at risk" of a shortage in the labour market.
Alberta	2000 to 2005	1998	• Joint regional HRDC and provincial COPS occupational forecast; • Industry consultations and consultants report; and • Consultations with regional and provincial LMI analysts.
British Columbia	1998 to 2008	1998	• Qualitative and quantitative information on demand (new job creation, attrition, turnover) and supply (current and expected availability) factors; and • Consultations with industries and government departments.
Yukon	1998 to 2008	1996 and 1998	• Expected economic growth and employment levels and growth; • Expected level of new employment due to retirements or other factors; • Unemployment levels; and • Qualitative information from labour, industry and employment group consultations.

Appendix D

Table A.5.1.[1] — *National Occupational Outlooks At A Glance*

Occupations with 'Good' Outlooks in 2004

NOC	Occupations	Outlooks	
		Current	2004
001	Legislators and Senior Managers	Good	Good
011	Administrative Service Managers	Good	Good
0111	Financial Managers	Good	Good
0112	Human Resource Managers	Good	Good
012	Managers in Financial and Business Services	Good	Good
013	Managers in Communication (Except Broadcasting)	Good	Good
021	Managers in Engineering, Architecture, Science and Information Systems	Good	Good
031	Managers in Health, Education, Social and Community Services	Good	Good
041	Managers in Public Administration	Good	Good
051	Managers in Art, Culture, Recreation and Sport	Good	Good
061	Sales, Marketing and Advertising Managers	Good	Good
062	Managers in Retail Trade	Good	Good
071	Managers in Construction and Transportation	**Fair**	Good
0711	Construction Managers	**Fair**	Good
072	Facility Operation and Maintenance Managers	Good	Good
091	Managers in Manufacturing and Utilities	Good	Good
111	Auditors, Accountants and Investment Professionals	Good	Good
112	Human Resources and Business Service Professionals	Good	Good
1122	Professional Business Services to Management	Good	Good
122	Administrative and Regulatory Occupations	Good	Good
1221	Administrative Officers	Good	Good
1225	Purchasing Agents and Officers	Good	Good
123	Finance and Insurance Administrative Occupations	Good	Good
1233	Insurance Adjusters and Claims Examiners	Good	Good
144	Administrative Support Clerks	**Fair**	Good
213	Civil, Mechanical, Electrical and Chemical Engineers	Good	Good
2131	Civil Engineers	Good	Good
2132	Mechanical Engineers	Good	Good
2133	Electrical and Electronics Engineers	Good	Good
215	Architects, Urban Planners and Land Surveyors	Good	Good
216	Mathematicians, Systems Analysts and Computer Programmers	Good	Good
2162	Computer Systems Analysts	Good	Good
227	Transportation Officers and Controllers	Good	Good
2271	Air Pilots, Flight Engineers and Flying Instructors	Good	Good
311	Physicians, Dentists and Veterinarians	Good	Good
3111	Specialist Physicians	Good	Good
3112	General Practitioners and Family Physicians	Good	Good
3113	Dentists	Good	Good
312	Optometrists, Chiropractors and Other Health Diagnosing and Treating Professionals	Good	Good
313	Pharmacists, Dietitians and Nutritionists	Good	Good
3131	Pharmacists	Good	Good
315	Nursing Supervisors and Registered Nurses	Good	Good
321	Medical Technologists and Technicians (Except Dental)	Good	Good
3211	Medical Laboratory Technologists and Pathologists' Assistants	Good	Good
3215	Medical Radiation Technologists	Good	Good
322	Technical Occupations in Dental Health Care	Good	Good
3222	Dental Hygienists and Dental Therapists	Good	Good
411	Judges, Lawyers and Quebec Notaries	Good	Good
412	University Professors and Assistants	**Fair**	Good
4143	School and Guidance Counsellors	Good	Good
4151	Psychologists	Good	Good
4211	Paralegal and Related Occupations	Good	Good

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[1] See *Job Futures 2000, Part 1: Outlooks by Occupation* for a complete profile of each occupation.

511	Librarians, Archivists, Conservators and Curators	**Fair**	Good
5121	Writers	Good	Good
5241	Graphic Designers and Illustrating Artists	Good	Good
621	Sales and Service Supervisors	**Fair**	Good
623	Insurance and Real Estate Sales Occupations and Buyers	Good	Good
6231	Insurance Agents and Brokers	Good	Good
6232	Real Estate Agents and Salespersons	Good	Good
6233	Retail and Wholesale Buyers	Good	Good
626	Police Officers and Firefighters	Good	Good
663	Elemental Medical and Hospital Assistants	Good	Good
721	Contractors and Supervisors, Trades and Related Workers	Good	Good
722	Supervisors, Railway and Motor Transportation Occupations	Good	Good
7232	Tool and Die Makers	Good	Good
725	Plumbers, Pipefitters and Gas Fitters	**Fair**	Good
7311	Construction Millwrights and Industrial Mechanics (Except Textile)	Good	Good
7315	Aircraft Mechanics and Aircraft Inspectors	Good	Good
735	Stationary Engineers and Power Station and System Operators	Good	Good
742	Heavy Equipment Operators	**Fair**	Good
821	Supervisors, Logging and Forestry	Good	Good
822	Supervisors, Mining, Oil and Gas	Good	Good
921	Supervisors, Processing Occupations	Good	Good
922	Supervisors, Assembly and Fabrication	Good	Good
9482	Motor Vehicle Assemblers, Inspectors and Testers	Good	Good
9511	Machining Tool Operators	Good	Good

Occupations with 'Fair' Outlooks in 2004

NOC	Occupations	Outlooks	
		Current	2004
063	Managers in Food Service and Accommodation	Fair	Fair
065	Managers in Other Services	Fair	Fair
081	Managers in Primary Production (Except Agriculture)	**Good**	Fair
1111	Financial Auditors and Accountants	Fair	Fair
1121	Specialists in Human Resources	Fair	Fair
121	Clerical Supervisors	**Limited**	Fair
1231	Bookkeepers	Fair	Fair
143	Finance and Insurance Clerks	Fair	Fair
1431	Accounting and Related Clerks	Fair	Fair
145	Library, Correspondence and Related Information Clerks	Fair	Fair
147	Recording, Scheduling and Distributing Occupations	Fair	Fair
211	Physical Science Professionals	**Limited**	Fair
212	Life Science Professionals	Fair	Fair
214	Other Engineers	Fair	Fair
2163	Computer Programmers	Fair	Fair
221	Technical Occupations in Physical Sciences	Fair	Fair
223	Technical Occupations in Civil, Mechanical and Industrial Engineering	Fair	Fair
224	Technical Occupations in Electronics and Electrical Engineering	**Good**	Fair
2253	Drafting Technologists and Technicians	Fair	Fair
226	Other Technical Inspectors and Regulatory Officers	Fair	Fair
3142	Physiotherapists	**Good**	Fair
3212	Medical Laboratory Technicians	Fair	Fair
323	Other Technical Occupations in Health Care (Except Dental)	Fair	Fair
3233	Registered Nursing Assistants (Licensed/Registered Practical Nurses)	Fair	Fair
341	Assisting Occupations in Support of Health Services	Fair	Fair
413	College and Other Vocational Instructors	Fair	Fair
414	Secondary and Elementary School Teachers and Counsellors	Fair	Fair
4141	Secondary School Teachers	Fair	Fair

4142	Elementary and Kindergarten Teachers	Fair	Fair
415	Psychologists, Social Workers, Counsellors, Clergy and Probation Officers	Fair	Fair
4152	Social Workers	Fair	Fair
4153	Family, Marriage and Other Related Counsellors	Fair	Fair
416	Policy and Program Officers, Researchers and Consultants	Fair	Fair
4160	Health and Social Policy Researchers, Consultants and Program Officers	Fair	Fair
4161	Natural and Applied Science Policy Researchers, Consultants and Program Officers	Fair	Fair
4163	Economic Development Officers and Marketing Researchers and Consultants	Fair	Fair
4166	Education Policy Researchers, Consultants and Program Officers	Fair	Fair
421	Paralegal, Social Services Workers and Occupations in Education and Religion	Fair	Fair
4212	Community and Social Service Workers	Fair	Fair
4215	Instructors and Teachers of Disabled Persons	Fair	Fair
512	Writing, Translating and Public Relations Professionals	Fair	Fair
5122	Editors	Fair	Fair
5124	Professional Occupations in Public Relations and Communications	Fair	Fair
513	Creative and Performing Artists	Fair	Fair
521	Technical Occupations in Libraries, Archives, Museums and Galleries	Fair	Fair
522	Photographers, Graphics Arts Technicians and Technical Occupations in Motion Pictures, Broadcasting and the Performing Arts	Fair	Fair
524	Creative Designers and Craftspersons	Fair	Fair
622	Technical Sales Specialists, Wholesale Trade	Fair	Fair
627	Technical Occupations in Personal Service	Fair	Fair
641	Sales Representatives, Wholesale Trade	Fair	Fair
643	Occupations in Travel and Accommodation	Fair	Fair
6431	Travel Counsellors	Fair	Fair
665	Security Guards and Related Occupations	Fair	Fair
723	Machinists and Related Occupations	Fair	Fair
7231	Machinists and Machining and Tooling Inspectors	Fair	Fair
7242	Industrial Electricians	Fair	Fair
7272	Cabinetmakers	Fair	Fair
728	Masonry and Plastering Trades	**Limited**	Fair
729	Other Construction Trades	Fair	Fair
731	Machinery and Transportation Equipment Mechanics (Except Motor Vehicle)	Fair	Fair
7312	Heavy-Duty Equipment Mechanics	Fair	Fair
732	Motor Vehicle Mechanics	Fair	Fair
7321	Motor Vehicle Mechanics, Technicians and Mechanical Repairers	Fair	Fair
733	Other Mechanics	Fair	Fair
741	Motor Vehicle and Transit Drivers	Fair	Fair
7411	Truck Drivers	Fair	Fair
7412	Bus Drivers and Subway and Other Transit Operators	Fair	Fair
744	Other Installers, Repairers and Servicers	Fair	Fair
823	Underground Miners, Oil and Gas Drillers and Related Workers	Fair	Fair
825	Contractors, Operators and Supervisors in Agriculture, Horticulture and Aquaculture	Fair	Fair
841	Mine Service Workers and Operators in Oil and Gas Drilling	Fair	Fair
941	Machine Operators and Related Workers in Metal and Mineral Products Processing	**Limited**	Fair
942	Machine Operators and Related Workers in Chemical, Plastic and Rubber Processing	Fair	Fair
943	Machine Operators and Related Workers in Pulp and Paper Production and Wood Processing	Fair	Fair
948	Mechanical, Electrical and Electronics Assemblers	Fair	Fair
9483	Electronics Assemblers, Fabricators, Inspectors and Testers	Fair	Fair
949	Other Assembly and Related Occupations	Fair	Fair
951	Machining, Metalworking, Woodworking and Related Machine Operators	Fair	Fair
9514	Metalworking Machine Operators	Fair	Fair

Occupations with 'Limited' Outlooks in 2004

NOC	Occupations	Outlooks	
		Current	2004
124	Secretaries, Recorders and Transcriptionists	Limited	Limited
1242	Legal Secretaries	Limited	Limited
1243	Medical Secretaries	Limited	Limited
141	Clerical Occupations, General Office Skills	Limited	Limited
142	Office Equipment Operators	Limited	Limited
1421	Computer Operators	Limited	Limited
1422	Data Entry Clerks	Limited	Limited
1433	Tellers, Financial Services	Limited	Limited
146	Mail and Message Distribution Occupations	**Fair**	Limited
222	Technical Occupations in Life Sciences	Limited	Limited
225	Technical Occupations in Architecture, Drafting, Surveying and Mapping	Limited	Limited
314	Therapy and Assessment Professionals	**Fair**	Limited
3143	Occupational Therapists	**Fair**	Limited
523	Announcers and Other Performers	**Fair**	Limited
525	Athletes, Coaches, Referees and Related Occupations	**Fair**	Limited
624	Chefs and Cooks	Limited	Limited
625	Butchers and Bakers	Limited	Limited
642	Retail Salespersons and Sales Clerks	**Fair**	Limited
644	Tour and Recreational Guides and Amusement Occupations	Limited	Limited
645	Occupations in Food and Beverage Service	Limited	Limited
647	Child Care and Home Support Workers	**Fair**	Limited
6470	Early Childhood Educators and Assistants	**Fair**	Limited
648	Other Occupations in Personal Services	Limited	Limited
661	Cashiers	**Fair**	Limited
662	Other Sales and Related Occupations	**Fair**	Limited
664	Food Counter Attendants and Kitchen Helpers	Limited	Limited
666	Cleaners	Limited	Limited
667	Other Attendants in Travel, Accommodation and Recreation	Limited	Limited
668	Other Elemental Service Occupations	Limited	Limited
724	Electrical Trades and Telecommunications Occupations	Limited	Limited
7241	Electricians (Except Industrial and Power Systems)	Limited	Limited
726	Metal Forming, Shaping and Erecting Occupations	Limited	Limited
7261	Sheet Metal Workers	Limited	Limited
727	Carpenters and Cabinetmakers	Limited	Limited
7271	Carpenters	Limited	Limited
734	Upholsterers, Tailors, Shoe Repairers, Jewellers and Related Occupations	Limited	Limited
736	Train Crew Operating Occupations	Limited	Limited
737	Crane Operators, Drillers and Blasters	Limited	Limited
738	Printing Press Operators, Commercial Divers and Other Trades and Related Occupations	Limited	Limited
743	Other Transport Equipment Operators and Related Workers	Limited	Limited
745	Longshore Workers and Material Handlers and Related Occupations	Limited	Limited
761	Trades Helpers and Labourers	Limited	Limited
762	Public Works and Other Labourers	Limited	Limited
824	Logging Machinery Operators	Limited	Limited
826	Fishing Vessel Masters and Skippers and Fishermen/women	Limited	Limited
842	Logging and Forestry Workers	**Fair**	Limited
843	Agriculture and Horticulture Workers	Limited	Limited
844	Other Fishing and Trapping Occupations	Limited	Limited
861	Primary Production Labourers	Limited	Limited
923	Central Control and Process Operators in Manufacturing and Processing	Limited	Limited
944	Machine Operators and Related Workers in Textile Processing	Limited	Limited
945	Machine Operators and Related Workers in Fabric, Fur and Leather Products Manufacturing	Limited	Limited
946	Machine Operators and Related Workers in Food, Beverage and Tobacco Processing	Limited	Limited
947	Printing Machine Operators and Related Occupations	Limited	Limited
9510	Welders and Soldering Machine Operators	Limited	Limited
961	Labourers in Processing, Manufacturing and Utilities	Limited	Limited

Table A.5.2.[2] — ***National Field of Study Outlooks At A Glance***

Fields of Study with 'Good' Outlooks in 2004

FOS	Fields of Study	Outlooks Current	 2004
C110	Accounting	Good	Good
C390	Transportation Engineering Technologies	Good	Good
C523	Health Technologies - Other	Good	Good
C550	Medical Laboratory Technologies	Good	Good
C560	Nursing - Diploma	Good	Good
C561	Nursing - Other	Good	Good
C580	Radiography/Radiation Therapy/ Nuclear Medicine Technologies	Good	Good
C720	Computer Science	Good	Good
M120	Commerce - Business Administration	Good	Good
M130	Specialized Administration	Good	Good
M316	Mechanical Engineering	Good	Good
M350	Civil Engineering	Good	Good
M360	Electrical Engineering	Good	Good
M370	Engineering - Other	Good	Good
M521	Medical/Surgical Specialties	Good	Good
M523	Health - Other	Good	Good
M560	Nursing	Good	Good
M720	Computer Science	Good	Good
M740	Mathematics	Good	Good
M820	Economics	Good	Good
M830	Geography	Good	Good
M850	Planning and Resource Management	Good	Good
T720	Computer Science	Good	Good
U120	Commerce - Business Administration	Good	Good
U130	Specialized Administration	Good	Good
U316	Mechanical Engineering	Good	Good
U330	Architecture	Good	Good
U340	Chemical Engineering	Good	Good
U350	Civil Engineering	Good	Good
U360	Electrical Engineering	Good	Good
U520	Medicine (MD)	Good	Good
U523	Health - Other	Good	Good
U530	Dentistry	Good	Good
U560	Nursing	Good	Good
U570	Pharmacy	Good	Good
U630	Food and Household Sciences	Good	Good
U680	Veterinary Sciences and Medicine	Good	Good
U720	Computer Science	Good	Good
U740	Mathematics	Good	Good
U820	Economics	Good	Good
U840	Law	Good	Good
U850	Planning and Resource Management	Good	Good
M430	Library and Records Science	**Fair**	Good
M620	Biology	**Fair**	Good
U750	Physics	**Fair**	Good

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[2] See *Job Futures 2000, Part 2: Outlooks by Field of Study* for a complete profile of each field of study.

Fields of Study with 'Fair' Outlooks in 2004

FOS	Fields of Study	Outlooks	
		Current	2004
C362	Electrical/Electronic Engineering Technologies	**Good**	Fair
C382	Instrumentation	**Good**	Fair
C030	Commercial and Promotional Arts	Fair	Fair
C040	Creative and Design Arts	Fair	Fair
C050	Fine Arts	Fair	Fair
C060	Graphic and Audio-Visual Arts	Fair	Fair
C111	Financial Management - Other	Fair	Fair
C121	Business Administration	Fair	Fair
C131	Institutional Management	Fair	Fair
C140	Marketing	Fair	Fair
C315	Mechanical Engineering Technologies	Fair	Fair
C331	Architectural and Construction Technologies - Other	Fair	Fair
C340	Chemical Engineering Technologies	Fair	Fair
C350	Civil Engineering Technologies	Fair	Fair
C351	Surveying	Fair	Fair
C380	Industrial Engineering Technologies	Fair	Fair
C410	Mass Communications	Fair	Fair
C531	Dental Hygiene/Assistant Technologies	Fair	Fair
C610	Agricultural Technologies	Fair	Fair
C660	Primary Technologies - Other	Fair	Fair
C841	Protection and Correction Services	Fair	Fair
C891	Social Services	Fair	Fair
C893	Sports and Recreation	Fair	Fair
M220	Education - Non-Teaching	Fair	Fair
M230	Elementary/Secondary Teacher Training	Fair	Fair
M240	Physical Education	Fair	Fair
M250	Teaching - Other	Fair	Fair
M340	Chemical Engineering	Fair	Fair
M402	English	Fair	Fair
M403	French	Fair	Fair
M404	Linguistics, Translation and Interpretation	Fair	Fair
M420	History	Fair	Fair
M450	Religious and Theological Studies	Fair	Fair
M510	Basic Medical Sciences	Fair	Fair
M860	Political Science	Fair	Fair
M870	Psychology	Fair	Fair
M880	Sociology	Fair	Fair
M890	Social Work/Welfare	Fair	Fair
T060	Graphic and Audio-Visual Arts	Fair	Fair
T070	Personal Arts	Fair	Fair
T110	Accounting	Fair	Fair
T121	Business Administration	Fair	Fair
T312	Auto Body Repair	Fair	Fair
T313	Auto Mechanic	Fair	Fair
T314	Heavy Equipment Mechanic	Fair	Fair
T315	Mechanical Engineering Technologies - Other	Fair	Fair
T333	Welding	Fair	Fair
T362	Electrical/Electronic Engineering Technologies	Fair	Fair
T381	Manufacturing Engineering Technologies	Fair	Fair
T383	Machining	Fair	Fair
T390	Transportation Engineering Technologies	Fair	Fair
T531	Dental Hygiene/Assistant Technologies	Fair	Fair
T561	Nursing - Other	Fair	Fair

T562	Nursing Aide/Orderly	Fair	Fair
U010	Applied Arts	Fair	Fair
U051	Music	Fair	Fair
U220	Education - Non-Teaching	Fair	Fair
U230	Elementary/Secondary Teacher Training	Fair	Fair
U240	Physical Education	Fair	Fair
U250	Teaching - Other	Fair	Fair
U370	Engineering - Other	Fair	Fair
U402	English	Fair	Fair
U403	French	Fair	Fair
U410	Mass Communications	Fair	Fair
U420	History	Fair	Fair
U450	Religious and Theological Studies	Fair	Fair
U612	Animal and Plant Sciences	Fair	Fair
U613	Agriculture - Other	Fair	Fair
U620	Biology	Fair	Fair
U641	Forestry	Fair	Fair
U830	Geography	Fair	Fair
U860	Political Science	Fair	Fair
U870	Psychology	Fair	Fair
U880	Sociology	Fair	Fair
U890	Social Work/Welfare	Fair	Fair
M710	Chemistry	**Limited**	Fair
M730	Geology	**Limited**	Fair
M750	Physics	**Limited**	Fair
T150	Secretary - Accounting and Bookkeeping	**Limited**	Fair
T350	Civil Engineering Technologies	**Limited**	Fair
U710	Chemistry	**Limited**	Fair
U730	Geology	**Limited**	Fair

Fields of Study with 'Limited' Outlooks in 2004

FOS	Fields of Study	Outlooks Current	 2004
C141	Retail Sales	**Fair**	Limited
C210	Education and Counselling	**Fair**	Limited
T040	Creative and Design Arts	**Fair**	Limited
T141	Retail Sales	**Fair**	Limited
T891	Social Services	**Fair**	Limited
U590	Rehabilitation Medicine	**Fair**	Limited
C151	Secretary - General	Limited	Limited
C152	Secretary - Legal	Limited	Limited
C153	Secretary - Medical	Limited	Limited
C334	Architectural Design and Drafting Technologies	Limited	Limited
C370	Engineering Technologies - Other	Limited	Limited
C640	Environmental and Conservation Technologies	Limited	Limited
C641	Forestry Technologies	Limited	Limited
C670	Resource Processing Technologies	Limited	Limited
C812	Service Industries Technologies	Limited	Limited
T151	Secretary - General	Limited	Limited
T152	Secretary - Legal	Limited	Limited
T153	Secretary - Medical	Limited	Limited
T155	Secretary - Word Processing	Limited	Limited
T332	Construction Technologies	Limited	Limited

T334	Architectural Design and Drafting Technologies	Limited	Limited
T335	Drafting Technologies	Limited	Limited
T610	Agricultural Technologies	Limited	Limited
T631	Food Processing Technologies	Limited	Limited
T810	Cooking	Limited	Limited
T811	Food Preparation - Other	Limited	Limited
T812	Service Industries Technologies - Other	Limited	Limited
U404	Linguistics, Translation and Interpretation	Limited	Limited

Glossary of Terms

Term	Definition
Accreditation	• process that an agency or an association uses to grant public recognition to a training institution, program of study, individual or service that meets pre-set standards.
Applied Research Branch (ARB)	• a branch within Human Resources Development Canada which studies various characteristics of Canadians to help determine policy, or changes to policy, that may be implemented by the Government of Canada depending on the results of the research. Research areas include the workplace, child welfare, employment insurance, aging, labour market conditions, occupational projections, etc. ARB also publishes the *ARB Bulletin, Job Futures* and various other research papers.
ARB	**• see Applied Research Branch.**
Attrition	• jobs that are vacated due to retirement or death of the workers.
Average Annual Rate	• in *Job Futures,* this phrase describes the growth in employment or the number of graduates, averaged over a five- or ten-year period, e.g., from 1990 to 1995 the number of graduates increased by 10%, or at an average annual rate of 2% per year. The average annual rate reports the growth as being evenly distributed over each year. This will smooth a slightly irregular yearly growth pattern.
Bachelor's Degree	• undergraduate degree of university education which may take from three to five years to complete. In *Job Futures,* the reference to Bachelor's degree or level includes undergraduate diploma or certificate programs which may take from one to two years to complete.
Canadian Occupational Projection System (COPS)	• a family of economic models used to forecast current or future labour market conditions on an industrial and occupational basis. The system takes into account both the supply of, and the demand for, workers by industry and occupation.
Career	• used to describe the sequence of occupations, jobs or positions held in the lifetime of a person.
Census (e.g. 1991,1996)	• a survey of all Canadians conducted every five years across Canada by Statistics Canada. Used to determine population characteristics such as number of people, ages, education level attained, employment, unemployment, occupations, earnings, etc.
Certification	• the issuance of a formal document that certifies or declares that the holder possesses a set of skills, knowledge and abilities, usually received after completion of education/training/experience in the related areas.
College	• post-secondary institution offering certificate and diploma programs. Courses are usually one to three years in length.
Contracting-out	• when an organization hires someone from outside their organization to perform a pre-defined task, for an agreed upon fee, in a set period of time. Synonymous with outsourcing.
COPS	**• see Canadian Occupational Projection System.**
Costs/Benefits of Education	• costs include tuition, books and foregone earnings. • benefits include the extra earnings that individuals would make by continuing their education as opposed to entering the labour market immediately upon graduation.

Term	Definition
Current Outlook	• used to describe the chances of finding employment for each occupation or field of study in *Job Futures* in the current period of time. **• see *Understanding the Occupational Profiles* in *Part 1* and *Understanding the Field of Study Profiles* in *Part 2*.**
Cyclical	• fluctuations in economic activity characterized by periods of economic boom and downturn
Data	• numerical information which captures historical facts, used for analysis to describe and characterize why events have occurred.
Demand	• in the context of *Job Futures,* this term represents the number of workers that employers need to produce a given quantity of goods or services.
Earnings	• income that workers receive in the form of wages, salaries and net self-employed earnings. Excludes other forms of compensation such as retirement benefits, stock options or expense accounts. **• see Earnings (Full-time); (Full-year); (Part-time); and (Part-year).**
Earnings (Full-time)	• income that workers receive in the form of wages, salaries and net self-employed earnings from working 30 hours or more per week in their main job.
Earnings (Full-year)	• income that workers receive in the form of wages, salaries and net self-employed earnings from working either full time, part time, or both for the entire year.
Earnings (Part-time)	• income that workers receive in the form of wages, salaries and net self-employed earnings from working less than 30 hours per week in their main job.
Earnings (Part-year)	• income that workers receive in the form of wages, salaries and net self-employed earnings from working either full time, part time, or both for only part of the year.
Economic Conditions	• indicator of the state of the Canadian economy, in particular those relevant to the labour market.
Education, Training and Experience	**• see *Understanding the Occupational Profiles* in *Part 1*.**
Education Level – Community College	• Community college includes graduates of career programs, hospitals and schools of nursing, colleges d'enseignement general et professional (CEGEPs) and teachers colleges, but excludes university transfer program graduates.
Education Level – Master's, University	• Master's, university includes master's degrees and graduate diplomas and certificates.
Education Level – Trade/Vocational	• Trade/vocational includes pre-employment or pre-apprenticeship and skill upgrading courses lasting three months or more, but does not include block release apprenticeship training, basic training for skill development, language training and job readiness training.
Education Level – Undergraduate, University	• Undergraduate, university includes bachelor's degrees, first professional degrees, and undergraduate diplomas and certificates.
Employed	• an individual who is working full time, part time, or for themselves. **• see Employed (Full-time); (Full-year); (Part-time); (Part-year); and Self-employed.**
Employed (Full-time)	• an individual who works 30 hours or more per week in their main job.
Employed (Full-year)	• an individual who had a job, either full time, part time, or both, for the entire year.

Term	Definition
Employed (Part-time)	• an individual who works less than 30 hours per week in their main job.
Employed (Part-year)	• an individual who had a job, either full time, part time, or both, for only part of the year.
Employment Requirements	• the number of workers required by a specific industry to provide a certain quantity of goods or services. Synonymous with "demand."
Experience	• the knowledge and skills acquired through the performance of a set of activities.
"Fair" rating	• rating for current and future outlooks in *Job Futures.* • "Fair" labour market outlooks are neither "Good" nor "Limited". Jobs are more difficult to find; the probability of unemployment is higher; and wages and salaries are lower than in comparable occupational groups which are rated "Good." On the other hand, jobs are easier to find; unemployment is less likely; and wages and salaries are higher than in comparable industrial or occupational groups which are rated "Limited." • **see *Understanding the Occupational Profiles* in *Part 1* and *Understanding the Field of Study Profiles* in *Part 2*.**
Field of Study (Major)	• for purposes of analysis, the COPS group has lumped together certain programs of study. In *Job Futures* there are 34 trade/vocational fields of study, 42 at the community college and CEGEP level of study, 45 at the bachelor's university level, and 45 at the master's university level. • **see Program of Study.**
Field of Study (Broad)	• a grouping of major fields of study into nine broader areas of study including arts, business, education, engineering, humanities, life sciences, primary technologies, medicine and health, physical science, social sciences, and services. • **see Field of Study (Major).**
Forecast	• in a *Job Futures* context, this term is used interchangeably with projection. • **see Projection.**
Forecast Period	• for the purposes of *Job Futures 2000,* the forecast period/horizon is 1999 to 2004.
Forecast Tool	• in the context of *Job Futures,* this term includes computer models, quantitative and qualitative information, expert knowledge, and a broad consultation network.
Foregone Earnings	• in *Job Futures*, potential earnings individuals give up when they continue their education instead of entering the workforce immediately after graduating from high school.
FOS	• **see Field of Study (Major) or (Broad).** • **see *Understanding the Field of Study Profiles.***
Future Outlook	• an estimation of the chances of finding work in the future for each occupation or field of study in *Job Futures,* based on past and current labour market conditions, and expert analysis of potential future trends for each occupation.
"Good" rating	• rating for current and future outlooks in *Job Futures.* • "Good" labour market outlooks usually mean that finding stable work is relatively easy and working conditions are attractive or improving. • **see *Understanding the Occupational Profiles* in *Part 1* and *Understanding the Field of Study Profiles* in *Part 2*.**
Goods Sector	• sector of the economy which includes industries involved in the transformation or processing of material or physical objects.

Term	Definition
Industry	• a group of establishments who produce a common set of goods or services. For example, the retail trade industry includes all establishments who buy goods and resell them to the general public.
Industry Association	• an organization of companies that represents the industry and acts as a common spokesperson for the membership.
Infrastructure	• in *Job Futures,* used to describe the basic structural foundations of a society, i.e. roads, bridges, sewers, etc.
Job	• a paid position that requires specific knowledge, skills, experience or training that allows a person to perform a variety of required tasks in an organization.
Knowledge-based Economy	• an economy based on the development of information and dominated by specialized, sophisticated industries, such as computers, pharmaceuticals and consulting services.
Labour Force	• represents the population 15 years of age and older across Canada that is employed or unemployed, but actively looking for work.
Labour Force Survey (LFS)	• a monthly survey conducted across the 10 provinces in Canada by Statistics Canada of approximately 48,800 households to determine whether people above 14 years of age are working, not working, actively looking for work or no longer actively looking for work, i.e., not in the labour force.
Labour Market	• the forum where buyers of labour, i.e., employers, and sellers of labour, i.e., employees, meet to satisfy job requirements within the Canadian economy or marketplace.
Labour Market Conditions	• labour market conditions in a *Job Futures* context are defined as "Good," "Fair" or "Limited". • "Good" labour market conditions usually mean that finding stable work is relatively easy and working conditions are attractive or improving. • "Fair" labour market conditions are neither "Good" nor "Limited." Jobs are more difficult to find; the probability of unemployment is higher; and wages and salaries are lower than in comparable occupational groups, which are rated "Good." On the other hand, jobs are easier to find; unemployment is less likely; and wages and salaries are higher than in comparable industrial or occupational groups, which are, rated "Limited". • "Limited" labour market conditions mean that new entrants and re-entrants will have difficulty finding stable work, or that working conditions are not attractive or are deteriorating relative to those in other industries or occupations. For new entrants, such as school-leavers and immigrants, limited labour market conditions mean a low probability of finding permanent work and, if they find a job, relatively low pay. For employed workers, these relatively weak conditions will often mean a high probability of loss of work, a high probability of experiencing unemployment spells, and lower wages and salaries.
Labour Market Information (LMI)	• quantitative and qualitative information on employment, wages, standards, qualifications, job openings, working conditions and other factors related to the labour market.
Labour Market Outcomes	• in *Job Futures,* refers to the employment situation of individuals in any given occupation evaluated by factors such as earnings, access to jobs, mobility, and relative unemployment rates.
Level of Study	• refers to the level of education, e.g., trade/vocational, college and university.
LFS	**• see Labour Force Survey.**

Term	Definition
"Limited" rating	• rating for current and future outlooks in *Job Futures*. • "Limited" labour market outlooks mean that new entrants and re-entrants will have difficulty finding stable work, or that working conditions are not attractive or are deteriorating relative to those in other industries or occupations. For new entrants, such as school-leavers and immigrants, limited labour market outlooks mean a low probability of finding permanent work and, if they find a job, relatively low pay. For employed workers, these relatively weak conditions will often mean a high probability of loss of work, a high probability of experiencing unemployment spells, and lower wages and salaries. **• see *Understanding the Occupational Profiles* in *Part 1* and *Understanding the Field of Study Profiles* in *Part 2*.**
LMI	**• see Labour Market Information.**
Master's Degree	• post-graduate level of education attained after the successful completion of a Bachelor's degree at the university level. May take from one to two years to complete, depending on undergraduate qualifications and the Master's degree sought.
Median	• the middle value of a series of values arranged in order of size.
Mobility	**• see Occupational Mobility.**
National Graduate Survey (NGS)	• frequent survey of post-secondary school graduates conducted by Statistics Canada in which certain questions are asked of graduates two and five years after graduation that link education and training with current labour market status. Two-year surveys were conducted in 1984, 1988, 1992 and 1997. Five-year follow-up surveys were conducted in 1987, 1991 and 1997.
National Occupational Classification (NOC)	• classifies all occupations in Canada. This system of coding is the basis for the organization of occupations in *Job Futures*. **• see *Understanding the Occupational Profiles* in *Part 1*.**
Net Benefits	• in the context of *Job Futures*, it refers to the positive difference between the total benefits and total costs relative to career or educational choices.
New Job Openings	• the total number of new jobs due to changing economic activity and positions becoming vacant because of death, retirement, occupational mobility, and temporary labour force withdrawal.
New Job Seekers	• the total number of new job seekers entering the labour force. This number is the sum of recent graduates from the formal post-secondary school system, recent immigrants, and people re-entering the labour force after a temporary withdrawal, e.g., child bearing or rearing, educational leave, discouragement.
NGS	**• see National Graduate Survey.**
NOC	**• see National Occupational Classification.**
Non-completers	• individuals who have recently left the school system without graduating.
Occupation	• a collection of jobs or types of work sharing similar skills and responsibilities.
Occupational Group	• a group of similar occupations found in various industries or organizations. In *Job Futures*, an occupational group (3 digit NOC code) is an aggregate grouping of two or more occupations (4 digit NOC code). **• see *Understanding the Occupational Profiles* in *Part 1*.**

Term	Definition
Occupational Mobility	• when, for whatever reason, an individual moves from one job to another without experiencing an extended period of unemployment, e.g., worker to supervisor or manager, or is between occupations, e.g., bank teller to financial advisor.
Outsourcing	• when an organization hires someone from outside to perform a predefined task, for an agreed upon fee, in a set period of time. Synonymous with contracting-out.
Post-graduate	• continuing with some level of education after the completion of a university degree program, e.g. teaching certificate, lawyer, doctor, etc.
Post-secondary	• continuing with some level of education after completion of high school.
Prerequisites	• the previous education, training, experience, individual abilities, skills, or qualifications required for a person to undertake a particular program of study.
Primary Industries	• industries concerned with obtaining or using raw materials, for example wood or fish.
Probability	• the likelihood or chances of something happening.
Profession	• an occupation that requires specialized skills and advanced training.
Professional Association	• an organization that represents members of a professional occupation and may set standards for education/ training or professional designation.
Program of Study	• a detailed listing of areas of study developed by Statistics Canada. Encompasses some 150 areas of study at the university level and about 300 at the community college, Cégep, and trade/vocational levels of study.
Projections	• a quantitatively based view of the future economy derived through the use of historical data, computer models, expert knowledge and consultations. In reference to *Job Futures*, the emphasis is on future labour market conditions. Synonymous with forecast.
Pure Sciences	• sciences dependent on deductions from demonstrated truths, or ones studied from a theoretical perspective without regard to practical applications, such as mathematics.
Rate of Return to Education	• how much investment in education will benefit individuals in terms of earnings in the long term.
Red Seal	• a nationally registered trademark symbol adopted for the Interprovincial Standards Program to signify interprovincial qualification of tradespersons at the journeyperson level. It is affixed to provincial and territorial *Certificates of Apprenticeship and Qualification* of those apprentices and tradespersons who have met the national standard in a Red Seal trade. The Red Seal is a passport that allows the holder to work anywhere in Canada without having to write further examinations.
Re-entrants	• individuals who are returning to the labour market after an absence.
School Leavers	• individuals who have recently left the school system. Includes graduates and non-completers. **• see Non-completers.**
Secondary Industries	• industries concerned with the transformation of raw materials into goods, for example manufacturing, construction or utilities.
Sector	• in some instances, this term may be used to describe a grouping of industries or a grouping of occupations. **• see Industry.**

Term	Definition
Sector Council	• an organization that represents an industrial sector in terms of occupations, productivity, and viability of the industry.
Self-employed	• workers who work for themselves at their main job.
Skill Level	• a phrase used to classify occupations in the NOC by the level of training, education or experience required to perform an occupation. • **see *Understanding the Occupational Profiles* in *Part 1.***
Skill Type	• a term used to classify occupations in the NOC by the industry or sector in which the majority of the occupations fall. • **see *Understanding the Occupational Profiles* in *Part 1.***
Supply	• in the context of *Job Futures,* this term represents the number of individuals offering their services to employers, including new entrants to the labour market as well as those with or without a job.
Tertiary Industries	• refers to service industries such as retail, health, finance, etc.
Trade/Vocational	• higher level of education that may or may not require the completion of high school and may involve on-the-job training as part of the course requirements.
Training	• the acquisition of knowledge or skills by the performance of tasks under the direct supervision of a person who has already acquired the knowledge or skill. Training can occur on the job or in an educational program.
Trend	• an ongoing change in a set of observations taken over time.
Unemployed	• when an individual is not employed, is looking for work, and is available for work.
Unemployment Rate	• the percentage of individuals who are actively looking for work and are able to work but do not have a job, i.e., the number of unemployed individuals divided by the total number of people 15 years of age and older who have a job or are actively looking for work multiplied by 100, expressed as a percentage. • in the context of *Part 1* of *Job Futures,* the unemployment rate excludes full-time students who may be actively looking for work, or who are employed, and includes only the unemployed who had a job in the past 12-month period. This allows the unemployment rate shown in *Job Futures* to be calculated for a particular occupation. However, this rate is lower than the published national unemployment rate due to these exclusions. • in the context of *Part 2* of *Job Futures,* the unemployment rate is the percentage of graduates who are actively looking for work and are able to work but do not have a job. • **see *Understanding the Occupational Profiles* in *Part 1* and *Understanding the Field of Study Profiles* in *Part 2.***
University	• institution of higher education beyond the high school level, offering degree and certificate programs of study from one to four years in length, as well as post-graduate studies.
Upskilling	• to study or train to increase one's level of skills.